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PSYCHIATRY

A TEXT-BOOK FOR STUDENTS AND PHYSICIANS

BY

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La vraie médicine, celle qui est fondée sur des principes et qui consiste bien moins dans l'administration des médicamens que dans la connoissance approfondie des maladies, qui a été exercée par les médecins observateurs de tous les âges, qui doit seule faire la base de l'instruction publique, est marquée par d'autres caractères ; methode hippocratique et marche rigoureuse de l'observation conservées depuis plus de vingt siècles dans leur inaltérable pureté ; suspension de leurs progrès pendant des siècles d'ignorance et de barbarie, mais empressement des bons esprits à les reprendre ensuite et à les cultiver comme une branche de l'histoire naturelle . . . vues étendues pour appliquer à la médicine les progrès faits dans les autres sciences accessoires, la chimie, la botanique, la physique, la philosophie morale. . .

PH. PINEL : *Nosographie Philosophique, Paris, 1798.*

PREFACE

THE great increase of knowledge concerning those morbid conditions of the human body commonly but erroneously described as mental diseases, and the resulting improvements made in recent years in the methods employed in the investigation and treatment of them, may in part be urged as justifying the publication of another book on Psychiatry.

No higher or more imperative duty confronts the State and institutions of learning than that of encouraging, in every possible manner, the prosecution of studies which promise to result in the determination of the sources of rational thought and action; but it is evident that the main burden of the work must be borne by the medical profession, from whose ranks must come the leaders of any movement which has for its object the prevention and cure of the diseases characterized by defective or perverted functioning of the brain.

In writing this book I have made no attempt to compose an exhaustive treatise; my main object has been to call attention to that aspect of the subject which is in accord with the results of observations as they are conducted to-day at the bedside and in the laboratory; and while presenting the different views of leading authorities in a manner readily to be comprehended by students of this important branch of medicine, to stimulate to greater activity the interest in the investigation of problems in the solution of which will be found the means of increasing the brain power of the nation.

If this book shall in any way serve the purpose for which it has been written, it will be in large part due to the encouragement and advice of many friends, to whom I gratefully acknowledge my indebtedness.

S. P.

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PSYCHIATRY

CHAPTER I

THE IMPORTANCE, SCOPE, AND METHODS OF MODERN PSYCHIATRY[1]

PSYCHIATRY is a branch of general medicine. One of its objects is to investigate the causes, course, and termination of those diseases whose chief symptoms are characterized by anomalies in the so-called mental processes. The ultimate aim of these studies should be, first and foremost, to find and then to apply the means best adapted to promote normal thinking; for the actual cure of cases of alienation is a matter of secondary importance in comparison with the discovery of methods of preventing its spread.

In view of the increasing amount of interest taken by the public in all matters affecting its general welfare, it would hardly seem necessary to make a special plea for the granting of opportunities for study and investigation to those whose chief interest is to ascertain the surest and best means of promoting rational thought and action. If Norman Lockyer's dictum be true, that "a struggle has begun in which science and brains are to take the place of sword and sinews," is it not desirable that

[1] Cowles, Edward: Advanced Professional Work in Hospitals for the Insane. Am. Journ. Insan., vol. lx, 1898. Gaupp, R.: Ueber die Grenzen psychiatrischer Erkenntnis. Centralbl. f. Nervenheilk. u. Psych., January, 1903. Bawden, H. H.: Recent Tendencies in the Theory of the Psychical and Physical. The Psychological Bulletin, Literary Section of Psychol. Review, March 15, 1904. Meyer, Adolf: A Few Trends in Modern Psychiatry. Hoch, August: A Review of Psychological and Physiological Experiments done in Connection with the Study of Mental Diseases. The Psychological Bulletin (Psycholog. Review), vol. i, Nos. 7 and 8, June 15, 1904.

some concerted and well-directed effort be made to find out the most efficacious way of increasing the brain power of the nation? If the question of the mental health of a community is one of vital importance, how long will the investigations relating to its preservation be carried on under such discouraging conditions as now exist in this country? With the rapid growth of modern civilization the duties of the alienist are every day becoming more arduous and complex; and yet at the beginning of the present century, particularly in the United States and England, he finds himself poorly equipped to grapple with the problems forced upon him not only in his routine practice, but also by the State and by society at large. What is insanity? How may the ravages of the scourge be lessened? How far are individuals responsible for their actions? These and other problems of equally grave import, touching the very foundations of the social structure, are daily propounded. But that in reality the public are wholly indifferent as to the manner in which these questions are answered is clearly proved by the fact that no suitable provision has yet been made in this country for giving instruction in psychiatry, and that serious investigations concerning the nature of mental diseases have scarcely been begun. Nor does it appear logical that in the face of this lamentable state of affairs the opinion of the so-called expert on insanity is daily sought for and forms the basis upon which even the issues of life and death are decided. Fortunate would be the community in which there was a fully equipped and well-organized psychiatrical clinic under the control of a university and dedicated to the solution of these and similar problems. The mere presence of such an institution would indicate that people were as much interested in endeavoring to increase the public sanity as they are in the results of exploration in the uttermost parts of the earth or in the discovery of a new star.

There is no department of medicine in which the investigator needs to be in more intimate touch with the advances of modern science than in psychiatry. The problems to be solved by it are mainly of general, not special, interest. It not only forms a branch of general medicine, but should be classed with

other biological studies. Science has demonstrated that the anomalies in thought, action, volition, and emotion, popularly referred to as forms of insanity, are the expression of a disordered functioning of the central nervous system. Gradually we are awakening to an appreciation of the fact that the same general methods of investigation that are applicable in the study of all biological sciences may be successfully adopted in attacking the problems connected with mental diseases.

Let us consider very briefly the methods which the alienist may employ in dealing with psychic phenomena. The problems to be solved can be approached from several stand-points which for the sake of convenience can be described as psychological, clinical, chemico-physical, and anatomico-pathological. A word may here be said regarding the attitude of the alienist towards the study of mental phenomena or the functions of the cerebral cortex. Instead of contenting himself with a naive psychology founded upon theory and speculation, he has been taught to rely upon the basis of steady, painstaking observation, substantiating his results whenever possible by experiment. And by these methods alone will it become possible to attain a comprehensive rational understanding of the nature of insanity. The point of view of the modern physiologist, that organic processes are referable to physico-chemical changes, offers another vantage ground, since physiology also teaches that material changes in any organ give rise to disorders of function. The brain is no exception to this rule. Changes in consciousness, anomalies in the emotional life, impairment of volition, are merely expressions of a disturbance in equilibrium of the functions of the brain. In this country, particularly, the alienist is singularly indebted to the physiologist and to the psychologist, not only for keeping alive and stimulating interest in the study of mental phenomena, but also for valuable contributions that have been made by both to our knowledge of the functions of the central nervous system. So little is known, so much still remains to be found out, and the speculative tendency in certain quarters is so strong, that the temptation to substitute theory for observation and experiment has to be met and resisted at

every turn. The relation of body and mind is still an enticing theme for the philosopher, but to spend valuable time in theorizing as to the manner in which the ultimate solution of this problem will be effected belongs only to those who live in a realm that is far afield from the path of the clinician. New points of view are always desirable, if they ultimately lead to the discovery of additional facts; but psychiatry cannot afford to build upon shifting sands. The theories of psycho-physic parallelism and of neo-vitalism may afford useful working hypotheses to many investigators, but their adoption as philosophical creeds should be a matter of no concern to the alienist. The attempt to establish a "psychological basis" for the study of mental disease is quite as undesirable as would be the attempt to limit clinical medicine to the mere study of symptoms. The psychological method is a useful aid to investigation, but to consider its scope and methods as the end-all of modern psychiatry shows no appreciation of the advances that have already been made. Great as has been the stimulus derived from psychological studies, the alienist fully appreciates that his line of investigation differs essentially from that of the psychologist.

But before pointing out more in detail the positive advantages derived from the new psychology a word of caution is necessary. The facts derived from observation and experiment have thwarted the attempts of those who have tried to transform the useful working hypotheses expressed in the theory of psycho-physic parallelism into dogmas. Even those who were formerly the most ardent supporters of this doctrine are now willing to admit that, while the parallelism may hold in the case of the simpler sensations, it cannot be applied to the more complicated psychic phenomena. Even in the analysis of the simpler mental phenomena[2] it is impossible to correlate the so-called mental and physical events. In all the cerebral processes, from the simplest sensations to the most complex psychic phenomena, there is a series of physico-chemical changes that

[2] V. Kries: Ueber die materiellen Grundlagen der Bewusstseinserscheinungen, 1901.

take place, and these, so far as is known, have no immediate correlates in the mental sphere. A series of ether vibrations strike the ear and the individual may become conscious of a musical note. How is each event in this physical chain to be correlated with those comprising the psychic phenomenon? And, in fact, do not the teachings of modern science demonstrate the futility of such an attempt? According to the psychophysical theory the individual events in one place are not contrasted with those in the other, but what is actually attempted is the establishment of a parallelism between a whole series of events on the physical side with those in the mental sphere.

But it may be asked, Who shall determine exactly the two series of events that are to be contrasted? What is to be called physical and what mental; and what censor shall decide the question for us? The careful analysis of the cerebral functions has resulted in the destruction of the artificial barriers that were supposed to separate them from each other. The differences of gradation but not of quality are recognized. The power of discrimination between violet and yellow, heat and cold, pleasure and pain, represents to each sentient individual important distinctions, but by what right do we assume that in the final analysis these differences are not referable to physical processes that vary only in degree and intensity? For all that we know to the contrary there are no abrupt divisions or chasms to be crossed. The cerebral processes vary, but they do so by degrees, by shading off into each other without gap and without break in continuity.

It would be superfluous to emphasize the necessity of far more active coöperation in America between psychologist and psychiatrist were there not abundant evidence of the lack of communism of interests. Two facts have contributed to this unfortunate condition. In the first place, too many students of normal mental phenomena start with philosophical speculation and make exact observation and the recording of facts of merely secondary importance. This attitude in a measure accounts for the widespread and not unjustifiable scepticism abroad as to the true merit of many of the so-called

psychological investigations. And again, when a recognized leader in the modern school of psychology has actually admitted defeat and declared that his specialty never can become a science, is it to be expected that the wares he offers for sale are to be taken at more than their appraised value? But, happily, although he may have succeeded in demonstrating the inefficiency of his own methods, he has failed signally in the attempt to prove that all others are equally untrustworthy. More hopeful investigators—and, fortunately, they represent the large majority of psychologists—still have faith in the efficacy of patient and well-directed observation. The end is not yet in view, but a bright and brilliant page is being written, and even in the face of what seem to be insuperable difficulties the investigator, in the light of the advances that have been made since Herbart's day, finds reason to take courage and begin the attack anew. Observation, whether it be introspective in character or be applied to the study of mental phenomena noted in others, is being carried on with more rigorous exactitude than ever before. This is still the period of critical analysis. The period of synthesis will come as soon as the methods of introspection, of observation of the normal and abnormal mental processes, and of experiment stand the crucial tests applied to them.

A few important facts have been unearthed that have given us new points of view, and as a consequence of this extension of the horizon many of the immediate clinical problems have become less complex as the old riddles have been re-stated in the language of the physiologist, thus rendering an attack with promise of success no longer an improbability. In the analysis of sensations Mach[1] and others have at least formulated working hypotheses of great practical value. Furthermore, it has been demonstrated that the various muscle, joint, and complex organic sensations not only play an important rôle in the physiology of sensibility, but are also intimately related to the higher mental processes. Within the last two decades the constantly increasing number of publications devoted to studies

[1] Die Analyse der Empfindung, Jena, 1902

in psycho-pathology have given a new impetus to clinical psychiatry. These and similar studies have shown that the methods used in the laboratory to investigate the problems of normal brain physiology necessitate modification before they can be adapted to meet the conditions in the ward, and as a result attempts are in progress to select for investigation methods as simple as possible which may be applied to the study of individual cases by the clinician at the bedside. Psycho-pathology does not begin and end merely by measuring the promptness of reactions; its chief service has been in an analysis of the attention, in the study of the character of the individual reactions, of the anomalies of connected thought, and in investigating the sharpness and correctness, under varying conditions, of individual judgment. One result of all this study has been that more or less abstract terms can now be replaced by simpler expressions which greatly facilitate the formulation of the problems to be solved. Take, for example, the analysis of the mental symptoms of fatigue. In this connection it has been shown that the symptomatology of fatigue can not be expressed in one concrete and homogeneous term, but represents an aggregate of symptoms. Furthermore, we know that the fluctuations of the mental functions in different persons vary not only as conditions change, but at different times of the day in the same individual.[1]

The investigations that have for their aim the determination of mental capabilities and individual variations deal with problems of vital significance, and a word may be said in reference to the important practical bearing of these studies. As will be seen later, the exaggeration of personal reactions or idiosyncrasies plays no small rôle in the pathogenesis of insanity. A comprehension of the evolution of such disease processes, therefore, calls for a more or less accurate knowledge of mental traits and idiosyncrasies. Before he can expect to recognize an incipient mental defect the physician must be able to form at least an approximate estimate of what is normal, and

[1] Finzi, J.: Die normalen Schwankungen der Seelenthätigkeiten. Uebersetzt von Jentsch. Wiesbaden, 1903.

any attempt to do this necessitates the careful study of cases and a minute and scrupulously exact differentiation of symptoms. In this way alone will it be possible to determine the standards of measurements by which the mental capacity, the intensity or incongruity of emotional reactions, the limitations of the volitional processes, and other conditions can be estimated. Undoubtedly much of the indifference exhibited by the medical public to the study of psychiatry has arisen because alienists have hitherto failed to enlist the sympathy of intelligent physicians, inasmuch as they have not demonstrated with sufficient care the tangible visible reactions in cases of alienation, and the possibility of provisionally grouping them according to their intensity in some sort of orderly fashion. Most of these phenomena are as apparent as are the physical symptoms of cardiac or pulmonary disease, and it is no less possible to obtain a clue as to what constitutes the normal functioning of the brain than to detect impairment of the respiratory or cardiac functions. Granting the truth of this affirmation,—and it is one that may be tested by observation,—the immediate need of prosecuting these investigations with renewed vigor at once becomes apparent.

One or two concrete examples will be sufficient to demonstrate the demand for such a procedure. The opinion of an expert is sought for in examining a new recruit who is desirous of entering the ranks of the army or navy; and to-day the universities have physical directors to examine into and pass upon the physical condition of students before they are allowed to compete in inter-collegiate sports. And yet at the same time a heterogeneous mass of humanity, without any form of selection and utterly regardless of its fitness, is driven through a so-called education. Society at large must sooner or later awaken to the realization that the indiscriminate education of the masses can not be too strongly condemned, for excessive demands on the brain power of a community must ultimately lower not only the intellectual, but also the moral standards. Even with the crude and imperfect methods now used by the alienist, if the opportunity were given to him to apply his tests, it would be possible

greatly to reduce the numbers of those who are seriously injured mentally and morally by a schooling ill adapted to their individual needs and necessities. Every one admits that it is the duty of the physician to warn those with weak hearts or lungs not to overtax those organs. Is it not equally important that the mental welfare of a community be safeguarded? Only some men are born to be educated; how many more, unfortunately, have thrust upon them an education which is disastrous not only to themselves, but also to the community at large! To prevent the sins of over-educated fathers and mothers from being visited upon the children unto the third and fourth generation is a problem of great sociological as well as economic importance to the state. The sudden expansion of mental powers may be quite as unfortunate as the sudden acquisition of riches, and the community that heedlessly imposes mental tasks indiscriminately upon the children in its public schools adds greatly to the list, already appalling in length, of those who overtax the capacities of hospitals for the insane.

Those who are familiar with the trend of modern psychiatry do not need this reminder of the fact that the work of the alienist has an important bearing on problems of the highest ethical importance. Not only is the alienist concerned in the attempt to throw light upon the nature and genesis of insanity, but as these investigations necessitate on his part the careful analysis of the higher cerebral faculties and the determination of the source of motives for action, his work leads him to the consideration of all problems connected with the conduct of his fellow-creatures. Duprat[5] has emphasized the fact that "the doctor-philosopher" of to-day, in following men like Charcot, Ribot, and Janet, has introduced into psychology an entirely new spirit. These authors have shown that the impulses and vagaries of conduct in the person affected with nervous or mental disease are only accentuations of traits common to each individual. As the result of this and similar investigations his

[5] Duprat, G. L.: Morals. A Treatise on the Psycho-sociological Bases of Ethics. Transl. by W. J. Greenstreet. New York, 1903.

special field has so broadened that the alienist finds to-day that he has entered the sacred precincts once occupied solely by the metaphysician and the philosopher. The doctrine that all processes which disturb or curtail the functions of the nervous system are followed not only by defects in connected thought and rational action, but with equal certainty by anomalies of conduct in the ethical and moral spheres, is merely a statement of facts that are self-evident to those whose eyes are trained to observe. Those who would lead the blind must themselves know how to walk; they must be sure of their own sight and know whither they are going. Theories worked out in the cloister, preconceived ideas of what ought to be, the invocation of the categorical imperative, can no longer supply even tentative explanations of the cause and motives of our actions. There is a preventive morality just as there is a preventive medicine, and he who would understand the former must know something about impulses, imperative ideas, inhibition, psychomotor excitement, and suggestion. Conduct is the measure of the functional capacity of the central nervous system; and there may be psycho-motor excitement in the carrying out of the most complicated as there is in the execution of the simplest acts, such as raising an arm or taking a step. Surely he who is capable of interpreting the simpler phenomena, without making pretentious claims, may rightly affirm that he is in a better position than the mere doctrinaire to study the problems of conduct.

Not only has it become possible by simple clinical study to analyze many of the more complex volitional processes, but some of the fundamental facts observed have been substantiated by experiment. The various abnormal psychic states, that are due to the effects of alcohol, morphin, caffein, the bromides, and other poisons upon the mental processes, have been studied and, although the results show considerable discrepancies, a sufficient number of data have already been brought to light to justify further investigations in this field.* Hoch's studies, be-

* Weygandt, W.: Die Forschungsrichtung der Psychologischen Arbeiten. Centralbl. f. Nervenheilk. u. Psych., 1903, Nr. 156, 158.

gun in Kraepelin's laboratory and continued in this country, would have received far wider recognition and would have served to arouse the interest of alienists in America to the far-reaching character of such investigations had there been a more intelligent appreciation of the need of accurate and timely observation along these lines. Not only have the more elementary mental processes been a subject of careful study, but the emotions, the volitional processes, the powers of discrimination and judgment, and the complex personality have been shown to be composite, not single functions, and "functional psychology has at last succeeded faculty psychology."[1]

If now we turn to the consideration of what the application of these psychological methods to the study of patients has accomplished, it will be found, in the first place, that a fertile field is at once opened to investigators. In a clinical psychology such as that exemplified in the studies of Wernicke and Ziehen the advantages and disadvantages of this method readily become apparent. From a purely practical stand-point alone Wernicke's work is unique and deserves the attention of every practical alienist. Believing as he does that the time is not yet ripe for broad comprehensive classifications, Wernicke attempts merely to analyze accurately the individual symptoms in different diseases in the hope that some additional clue may ultimately be obtained as to the etiology and genesis of a given disorder. Here we have at its best the critical analysis of symptoms, and no one who has carefully studied Wernicke's Psychiatry can fail to appreciate the evident genius that is reflected in this method. But the fact that the analysis of cases is so keen and the results of the observations are presented in so clear and cogent a manner renders the defects of a symptomatologic grouping all the more obvious. The attempt to compare the disturbances in the psychic functions with those of speech, although from a psychological stand-point ingenious and one that has unquestionably facilitated the clinical study, is a method of investigation that can not by itself lead the alienist

[1] Baldwin, J. M.: Mental Development. New York, 1897

to the goal he strives for. Descriptive psychiatry has been singularly enriched by this narrative of cases in terms that have not as yet had a specific meaning assigned to them, but other no less important factors have not been treated with equal consideration. The method employed by Wernicke is a fulfilment of a hope expressed by Kahlbaum that a careful analysis and study of the mental phenomena of the insane would ultimately give birth to a special scientific symptomatology, the immediate outcome of clinical investigation and not the mere adaptation of current psychological theories and speculations. No better exemplification of the good that may be accomplished by these refined methods of analysis can be brought forward than by a reference to the studies made in connection with the various paranoiic states. In the light of recent investigations we no longer speak of primary intellectual defects, as if the intellect were an isolated faculty, or compare the genesis of an insane idea to the birth of Minerva, inasmuch as careful observation has shown that the majority can be traced to primary changes in organic sensations, anomalous emotional states, and disturbances in the complex of sensations designated collectively as the personality. Head* has shown us how subtle and evanescent may be these early changes in organic consciousness, and his careful observations have shown that the genesis of the most complex mental disturbances may ultimately be explained by the facts brought to light by the bedside study of patients. Although it may only be the outline sketch that he has as yet given, even from this we can at least get some faint idea of how the intricate paranoia-complex develops gradually and insidiously from the indefinite apprehensiveness, mild suspiciousness, ill-defined hallucinations and delusions so commonly associated with visceral disease. A still greater refinement of the methods employed, a greater exhibition of patience, a little more general interest in careful bedside observation, and these apparently illusive problems will at least be definitely formulated.

* Head, Henry: Certain Mental Changes that accompany Visceral Disease. Brain, 1901, p. 345.

Another excellent example of what may be accomplished by these methods may be found in Bonhoeffer's study of the alcoholic psychoses. Here the most painstaking methods have been adopted in the analysis of the mental symptoms, and the character of the reactions obtained in individual cases has been greatly elucidated. If it is possible, for instance, in these psychoses of toxic origin to demonstrate the extent and nature of the anomalies of the cerebral functions, we may in the end get some clue as to the manner in which the poison acts.

The attitude of the modern alienist was clearly indicated by Kahlbaum* in the preface to his classical work on catatonia. The insufficiency of the psychologic method alone was clearly pointed out, whereas the danger of restricting the study of a disease to the minute analysis of symptoms at any given period was shown to be an error that can not be too carefully guarded against. The actual advances that have been made in the differentiation of disease groups bear testimony to the necessity of recognizing this principle. The most prominent example is that offered by the investigations that culminated in the gradual separation of the dementia paralytica group from a heterogeneous mass of symptom-complexes. This division was made possible by the study not merely of the individual mental and physical symptoms at one period, but by a general survey of the whole course of the disease. The attempt to apply a similar method to the study of other diseases resulted in the recognition by the French of the circular insanity (folie circulaire). Isolated groups of symptoms were thus shown to be related to others that on the surface had the appearance of dissimilarity, and Kahlbaum was able to define the catatonic symptom-complex and Hecker to elucidate hebephrenia, or the so-called adolescent insanity.

Among the apparently radical departures that have been made in modern psychiatry, unquestionably that of Kraepelin has attracted the most notice. This investigator believed that

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*Kahlbaum, Karl: Abhandlungen über Psychische Krankheiten. Katatonie. Berlin, 1874.

the time was ripe for an attempt to sketch out in a general way certain groups which might eventually prove to be disease entities, and numerous observations have been brought to light which justify this position. Alienists had already emphasized the necessity of studying the entire course of a disease and not merely the isolated symptoms of a given period. Similar clinical pictures were known to occur in a great variety of disorders, and the analysis of these individual phenomena by themselves, without regard for the whole, merely impeded progress. Granted that mental diseases are not essentially different from other diseases of the body, no less regard must be given in psychiatry to the course and prognosis than is bestowed upon them in other maladies.

Kraepelin's departure is, however, not so radical as many of the more recent critics would lead us to believe. His attitude is that of the observer who finds it essential to success that every factor connected with the problem in question should be taken into account and given its due valuation. The symptomatologic grouping may, as has already been pointed out, be suggestive in many ways, but no definite advance can be made by merely refining the methods for the study of symptoms. The process of discrimination which led to the formation of the two groups of symptoms under the heads of manic-depressive insanity and dementia praecox is in reality an excellent example of a synthesis carried out along broad and comprehensive lines.

No account of modern psychiatry would be complete without some mention of the work done by the French school, particularly that of Charcot and his pupils, in differentiating and describing the chief characteristics of hysteria. Here again the same clinical principle has been applied with equally successful results. The study of composite, not isolated, pictures has demonstrated that the occurrence of hysterical states does not necessarily imply the existence of a disease entity. To comprehend this disorder we must frequently go back in the history of the individual to childhood and trace the whole evolution of the disease before a clear and comprehensive idea of the disorder becomes possible. Hysterical traits are not born with the indi-

vidual, but in all probability functional defects in the nervous system exist out of which the hysterical character develops whenever there is sufficient provocation. Janet's recent conception of psychasthenia is the result of another brilliant study pregnant with suggestion for future investigation, although possibly lacking in some of its details the confirmation of facts to be obtained only after a more protracted period of clinical observation. The advancement in psychiatry will depend largely upon the care and accuracy with which individual cases are studied. If generalizations are to be successfully made, they must be based upon the scrupulously exact analyses of all the factors concerned. Fortunately alienists in this country have at last broken away from the conventional method of merely recording groups of symptoms without attempting to assign the proper valuation to the etiology, course, and termination of the disease. Persistent and exact observation in the ward and at the bedside is fast taking the place of the haphazard and casuistic statistical methods that so long threatened to stifle the intellectual life of those who were engaged in collecting these figures. Even yet, in order to gratify the morbid curiosity of the public, the results of imperfect observations are tabulated and published in hospital reports, and these statistical tidbits are made to serve as the basis of superficial generalizations.

The present is the time in which to perfect the methods for the careful bedside study of patients. If the results from the laboratory investigations have not equalled the expectations of those who would reach the psychiatrical Mecca without the toils of a long pilgrimage, a similar high standard of work may be profitably adopted by the clinician. The present impediments that interfere with the realization of this advance will be discussed when we come to speak of the "Modern Hospital for the Insane." The remarkable advances that have been made in the treatment of alienation, as well as the relation of the work of the pathologist to the clinical problems, are of sufficient importance to become the subject of separate chapters.

CHAPTER II

THE NATURE OF THE DISEASE PROCESS IN ALIENATION AND ITS RELATION TO THE PATHOLOGICAL CHANGES

Any attempt to discuss the nature of the disease process in cases of mental disorder necessarily brings us face to face with a number of problems that from time immemorial have perplexed even the most profound thinkers. While it is a fact that in many cases of alienation it is possible to demonstrate certain morphological changes in the central nervous system, the exact relation that these bear to the mental symptoms of the disease can not even be conjectured. In spite of this lack of continuity in our knowledge, our duty in regard to these questions is obvious. Just as in any other department of science where the realm of the knowable is limited in comparison with that of the unknown, we must hold fast to the little that we actually possess and then by observation and experiment endeavor to increase our actual store of facts. Countless investigators in every department of science, working from many different stand-points, are attacking the problems connected with the relations of structure and function. But so many ideas and new relationships are being constantly proposed that, although certain theories may from time to time be accepted as supplying a provisional working basis, any attempt at this time to interpret and correlate all the different views and opinions would be a hopeless task. So many hypotheses are being advanced and the tendency to indulge in speculation is still so prominent a characteristic of the human mind that Mach's warning to the physicist to beware lest he "out-philosophize the philosophers" is equally applicable to the alienist in his research work.

The relation of structural changes to disorders of function is still a matter of speculation. Nor is this uncertainty confined to the central nervous system, inasmuch as countless questions of a similar nature are arising in connection with

every organ of the body. Such being the case, it would not be strange if the exact nature of the disease process in cases of alienation should long remain in doubt. But, despite these serious limitations, workers in the laboratory and clinic should be encouraged by the fact that the little we know at least is sufficient to show the paths along which the alienist must pursue his studies. Experience has proved that the process causing the functional anomalies is a general one, giving rise to a great complex of symptoms and ultimately involving more or less of the whole personality. The correctness of this view is further substantiated if we pass from the consideration of symptoms to that of probable causes. Here too the multiplicity of factors of etiological importance at once becomes apparent. For example, an individual has an attack of typhoid fever which is followed by a psychosis. Is the fever the sole exciting agent or are other provocative factors concerned? The latter view is undoubtedly the correct one. In the same way dementia paralytica is not looked upon merely as the consequence of prolonged over-indulgence in alcohol or of a specific infection, but the individual so afflicted is regarded as having been in all probability "half born a paretic." Although definite answers can not be given at present to these and similar questions, at least we have learned to recognize the important fact that our investigations of these problems must be undertaken from a broad and comprehensive stand-point. What are especially needed in psychiatry at present are intelligent, broad-minded clinicians sufficiently in touch with the methods and data of modern science to be able to differentiate between these complex problems awaiting solution and decide which of them may be attacked from the clinical stand-point and which had better be left to the biologist or chemist.

In investigating into the nature of the process in cases of alienation we are naturally led to inquire whether or not mental disorders are to be classed as diseases of the brain. There can be no doubt that, if we view them purely from the symptomatological stand-point, Wernicke is correct in affirming that mental disorders are essentially diseases of the brain, not localized but

general in character. In one sense this position is thoroughly justifiable and is an indication that genuine advances have been made in psychiatry. But this view can not be maintained at present without some qualification. In the case of dementia paralytica it is easy to demonstrate a series of more or less specific changes in the central nervous system, and with these changes we correlate a number of functional modifications which also, when grouped together, bear a specific stamp. It should not be forgotten, however, that evidence adduced from clinical and pathological studies seems to favor the current view that dementia paralytica is the result of a toxic condition, although we are still profoundly ignorant not only of the nature of the poison, but also of its place of origin. But if the latter should be located in some organ outside of the central nervous system, from a technical stand-point this form of alienation can not be regarded as being purely a "brain disease." An even better illustration is seen in the study of mental disturbances associated with myxedema. Here it is known that the anomalies in the function of the brain depend upon disturbances in the thyroid gland, and hence it would be quite unfair to classify a myxedematous insanity as a disease of the brain alone.

Although the facts that are known in regard to the histology and pathology of the central nervous system are so few and isolated in comparison with the still unexplored territory, the meagreness of the practical results thus far obtained by no means justifies the criticism of those who have neither sufficient patience nor training to enable them to attain a broad and comprehensive grasp of the real nature of the problems to be solved. The many defects in our knowledge, it is true, serve to emphasize the difficulties with which the alienist is confronted in his attempt to gain a more comprehensive knowledge of the nature of alienation, but they need not deter investigators from prosecuting with renewed vigor their researches in the realms of physiology and anatomy. A few years ago a genuine but somewhat premature enthusiasm led not a few workers to believe that the new methods and discoveries in the histology and pathology of the central nervous system promised an almost

immediate solution of many of the problems of clinical psychiatry. This period dates from the work of Theodor Meynert, of Vienna, whose influence was felt so profoundly by alienists both in Europe and this country. Earlier observers had already directed their attention to the nerve-cell, and in a general way many of its properties and histological characteristics had already been recognized. Later on a great deal of energy was directed towards disentangling the vast complex of fibres which were found to exist everywhere in the central nervous system, many of the workers being imbued with the idea that were it possible to bring order out of this chaos great immediate benefit could be derived by the alienist from these studies and a new association psychology could be founded upon an anatomical basis. Unfortunately, not only were these hopes not realized and the results obtained negative, but, on the other hand, the habit of substituting hypotheses based upon incomplete anatomical studies for clinical investigations in some measure actually delayed even the proper formulation of the really essential problems. Nevertheless, genuine advances have been made in clinical psychiatry, thanks to the work of men who have been thoroughly trained themselves and who have sought the cooperation of the pathologists. And in the final analysis to-day the chief inspiration for the clinician must come from those who, as Pasteur once put it, are working in the "serene peace" of their laboratories.

Great as are the inherent difficulties of the problems that confront the alienist, they are often still further complicated by unwise attempts to interpret immediately clinical symptoms in the light of the facts furnished by the anatomist and pathologist. And the converse is equally true. Perhaps the most striking example of this error is to be found in the attempt to assign to the anatomical studies of Flechsig an immediate physiological importance. All that was actually demonstrated by these investigations was that the development of medullation in the nerves bears some general relationship to the appearance of function, but it has by no means been established that the former is absolutely essential for the latter. Indeed, it has been

demonstrated that definite nervous reactions may sometimes precede the formation of the medullary sheath. Furthermore, although Flechsig has shown that certain tracts receive their medullation at different times, these investigations have not thrown any light upon the great area that exists between the point in the cortex where so many fibres begin to lose their medullary sheath and the outermost layer, a space that is rich in cellular elements and a specific gray substance of great morphological as well as functional importance.

The essential differences in the histological structure of the various cortical areas can not, except in a very general way, be correlated with the functional differences. To suppose, for example, as Wernicke has done, that the consciousness of self, of the internal and of the external world, are represented in separate layers is a purely hypothetical conjecture. The whole subject of cortical localization needs revision in the light of the facts more recently demonstrated by the biologist and physiologist. The points of discharge for efferent impulses can no longer be considered as forming the limitations of centres, and the application of this term itself is indefinite.

The work of Apáthy, Nissl, and Bethe has clearly shown that the relation between nerve-cells and fibres is not as simple and clear as the earlier investigators would have led us to believe. As soon as we are able to establish definitely the relationship between nerve-cells, nerve-fibres, and the specific gray substance in the cortex, a decided advance will have been made not only of importance for the histologist, but one which will have an immediate bearing upon certain diseases, particularly dementia paralytica and certain other dementing processes.

Even from the little that is known it is justifiable to conclude that the so-called specific gray substance is an important element in the central nervous system. In animals where this morphological element is diffusely arranged, the reflex action is simple and the movements are incoördinated; but higher up in the scale, when the distribution of the gray matter is limited to certain areas, the movements become correspondingly more

complex and coördinated. This is equivalent to saying that the increase in complexity of reflexes and coördinated movements is dependent upon the efficiency of the receiving and elaborating organ. Recent investigations in morphology and physiology have shown that the ganglion-cell hypothesis is, after all, an inadequate attempt to account for all the phenomena of reflex action.[1]

As yet we have only a very imperfect knowledge regarding the blood and lymph-channels of the central nervous system, and leaving out of consideration for the moment the adventitial lymph spaces, practically nothing is known in regard to the passage of the blood through the brain substance. Recent investigations have clearly shown that the so-called extra- or peri-cellular lymph-spaces are mere artefacts, and this discovery has thrown some light upon certain pathological processes, since it is now definitely known that the round nuclei which in certain pathological changes are grouped about the nerve-cell are not lymphocytes, as is even believed by some to-day, but are neuroglia elements.

As regards the nerve-cells themselves, it will be found that, valuable as the earlier contributions were in giving us a more accurate knowledge of their intimate structure, later investigations have as yet failed to demonstrate the relation of the observed changes to the general pathological processes or to the clinical symptoms. The reaction of these structures is so delicate and so many factors—such as pre-agonal changes—may intervene, that it is almost impossible to deduce any general conclusions from the countless number of observations that have been made in regard to the supposed correlation of the structural changes and the clinical symptoms. Although many investigators, in despair at the slow progress that has been made in the study of the histology of the central nervous system, seem to discourage further investigations along this line and boldly declare that the only hope for a possible solution of all this

[1] Bethe, A.: Allg. Anatomie und Physiologie des Nervensystems. Leipzig, 1903.

chain of problems lies in the field of physics and chemistry, a more conservative opinion would justify the belief that important contributions still remain to be made by histologist and anatomist. In addition to those already referred to there is great need of the establishment of certain standards by which an approximate and rapid estimate may be made of the number of nerve-cells in the different areas of the cortex at different periods of life as well as their diminution during disease. The studies of Henschen and others in the pathology of idiocy have shown that in these conditions the embryonal type of elements persists, but whether there is any considerable diminution in the number of nerve-cells is still a matter for conjecture.

What is true of the nerve-cell is equally true of the fibre. The studies in dementia paralytica of Kaes, whose work is referred to more in detail later, has clearly shown how important are detailed careful studies of the relative number of fibres in the different cortical areas at different epochs of life and their diminution in various morbid conditions.

If we turn from the more purely anatomical and physiological questions to the specific bearing that certain groups of pathological changes have upon the symptoms, it may be said that in a few instances definite advances have been made. Since Tuczek first accurately described the disappearance of the tangential fibres from the cortex in general paresis, a large body of workers all over the world have been engaged in the study of this disease, and gradually a number of characteristics of this pathological process have been recognized, so that in from 80 to 90 per cent. of the cases a positive diagnosis of the existence of the paretic process can be made directly from the pathological findings. More recently, as will be seen later on, Nissl, basing his observations upon the study of individual cases, has definitely stated that it is possible to differentiate the paretic from the syphilitic process. If these observations are generally confirmed, it will be possible to take a decided step forward in the clinical differentiation of the two diseases. On the other hand, the differentiation of the protracted cases of dementia paralytica from certain forms of the senile or alcoholic psy-

choses still awaits solution. The remarkably careful and painstaking work of Alzheimer has demonstrated the possibility of differentiating anatomically between a number of the arteriosclerotic lesions and those of general paresis. And again in this direction the paretic process has been more definitely defined and the boundaries have been more nearly established. Surely even these advances are sufficient to justify the expectation that within the next decade this important group of diseases will be even more accurately outlined.

The problems of histopathology necessarily bring us to the consideration of the manner in which certain toxic products act. From the evidence at our command there can be little doubt that the series of changes, which are noticeable in the nerve-cell in febrile delirium and acute and sub-acute confusional states, as well as in the terminal stages of nearly all psychoses, are the result of the action of toxins.

As to the manner in which these poisons act or the source from which they are derived we are still ignorant, and, indeed, in regard to the more general subject of autointoxication practically nothing definite is known.

It is to be hoped that gradually some light will be thrown upon these problems, not only by the investigations made in pathology, but by the results of experimental studies, especially those in which the pathologist has the assistance and cooperation of a well-trained chemist. The field of the experimental production of anomalies of the cortical functions is one that as yet has hardly been entered upon. Difficult as the problems are which are awaiting solution, it can not be long before a large number of investigators will have entered upon this field, in which the harvest must eventually be so rich.

The conclusions reached by Cramer[2] deserve attention, as they summarize the opinions entertained by the majority of investigators. This writer affirms that in all forms of psychosis anatomical lesions are to be found, the most severe being

[2] Pathologische Anatomie der Psychosen. Handbuch der pathologischen Anatomie des Nervensystems. Berlin, 1904.

demonstrable in cases of progressive paralysis and in certain forms of chronic alcoholism. A condition similar to that found in cases of dementia paralytica is frequently noticed in the cortex of senile dements, but the lesions typical of senile dementia may be differentiated from those of paresis. The arterio-sclerotic atrophy presents, as a rule, certain characteristic changes. But frequently the localized increase in the glia is noted in the senile psychoses, in dementia paralytica, and not uncommonly in the so-called senile epilepsy. There is no specific change in the glia noted in any one psychosis. The simple psychoses of the senium not complicated by paralyses and not connected with the periods of great excitement or terminating in dementia present the fewest alterations. It is still questionable whether characteristic glia changes are met with in catatonic states. Conditions of confusion with great excitement, commonly referred to as acute delirium, are, as a rule, marked by the appearance of a typical cortical encephalitis which may or may not be of an infectious character. Delirium tremens and other acute psychoses may be differentiated from general paresis by the very small number of blood-elements present in the tissues, the absence of any very marked diminution of the fibres, and the failure to find sclerotic cells. The changes found in the acute delirium are not seen in any other psychoses except in dementia paralytica. Cases in which the process has not gone so far as to give rise to cell sclerosis, disappearance of fibres, cellular infiltration, and marked vascular changes, with great increase in the glia, afford some hope for recovery. Specific cell changes for individual psychoses do not exist.

On the whole, then, it may be said that the hopes of those who a decade ago saw rich rewards awaiting the investigations of the neuro-pathologist have not been justified. But is it not reasonable to suppose that advances towards a more comprehensive knowledge of the nature of mental disorders will neither be more rapid nor more delayed than one would expect in attempting a solution of problems equally difficult in other branches of medicine. And while careful, painstaking investigations conducted along all the different lines which the study

of this subject necessitates must evidently result in an accumulation of a valuable store of facts, it would be unreasonable to expect an immediate advance of psychiatry from the casual study of isolated portions of the central nervous system. The pathologist at the autopsy table should conduct his investigations with the realization that mental diseases are an expression of disordered functions of the brain, but that the causes for these anomalies may be situated in organs outside the central nervous system. He must further bear in mind the fact that if a pathological process once gives rise to a disturbance in the mental functions, the original trouble may become quiescent and the aberration may, so to speak, become self-accumulative.

CHAPTER III

THE SYMPTOMS OF ALIENATION

All forms of alienation are to be regarded as the results of bodily disease in which the disordered functions of the cerebral cortex afford the most prominent and characteristic of the symptoms. Although, as has already been said in the opening chapter, the clinical study of cases of insanity covers a very wide range and implies the application of the methods employed in clinical medicine and neurology, only the mental disturbances can be discussed within the present compass. The anomalies in the functions of the cerebral cortex may for convenience' sake be divided into various categories. From a physiological stand-point the student of mental processes has to consider the reception, retention, and elaboration of sensory stimuli and finally the discharge of the motor impulse. It is hardly necessary to again emphasize the fact that all the processes represent merely various gradations and not essential differences in quality or character.

1. IMPAIRMENT OF THE HIGHER CORTICAL FUNCTIONS AS SHOWN IN DEFECTS OF JUDGMENT AND INTELLECT. FIXED OR INSANE IDEAS.[1]

In the present section we shall not attempt to give a detailed exposition of the anomalies of judgment and intellect, but rather to indicate the manner in which they may be studied from a clinical stand-point. Faculties which represent the most complicated products of the cortical functions can neither be defined nor clearly described. What has been shown to hold true for the simpler mental phenomena—as regards their de-

[1] Baldwin, J. M.: Mental Development in the Child and the Race. New York and London, 1895. Tiling: Ueber die Entwicklung d. Wahnideen u. Halluzinationen aus d. normal Geistesleben. Riga, 1897. Spiller, Gustav: The Mind of Man. New York and London, 1902. Tiling: Zur Paranoiafrage. Psychiat. Wchnschr., 1902, Bd. 35, 431–442.

pendence upon other functions—applies with even greater force to the discussion of these final products of cerebral activity. In the attempt to analyze the latter one must never lose sight of the fact that their relationship to other functions is very intimate, whence it follows that any anomaly of one function will to a certain extent cause not an isolated but a general defect. The two terms, intellection and judgment, for a time formed a part of the stock in trade of the older psychology, but on account of the speculative and fanciful manner in which the discussions concerning their nature and origin were conducted little real advance was made towards a satisfactory interpretation or analysis of them. As in the case of sensation, memory, volition, or the emotions, so in a study of the intellect and judgment it has been found possible to split these complexes up into a great variety of simpler forms which merge into each other and concerning whose nature psychologists and alienists are gradually gaining an insight. As the character of even the simplest mental processes is at present indefinable, it is not to be expected that those of greater complexity can be differentiated and labelled. There are certain manifestations, however, of these functions that the alienist should recognize and with the genesis of which he should show some degree of familiarity. One of their most striking features is that they depend upon the activity and integrity of associative memory, so that impairment of the latter is always reflected in the anomalies of the former. These particular mental processes under discussion are of slow growth and only attain their maximum when the individual has reached the prime of life. Intellection and judgment necessarily imply the power to retain in memory a series of events which may be compared with the more recent facts introduced into consciousness. The comparison is made between the earlier and the more recent acquisitions, and the individual then tries to so adjust his conduct as to justify inferences drawn from these comparisons. If we trace the development of mental traits in the infant, we find that the power to form inferences or judgments only appears in proportion as the faculty to retain and to recollect past im-

pressions becomes greater. The greater the number of the acquisitions that are stored up in memory,—in other words, the greater the power of associative memory,—the greater the individual capacity for intellectual activity and rational thinking. In the earliest years of life sensory impressions play a far more important part than they do later on, and at first are the dominating features in all psychic reactions. For example, when the newborn infant takes the breast it does so in direct response to sensory stimulation, but gradually mere sense impressions, whether of intra- or extra-organic origin, become replaced by more complicated acts of associative memory; and these, as the cerebral capacity increases, may take the place of the primitive unelaborated sensory impressions. In the adult a train of associative thought which ends ultimately in the expression of judgment may be initiated either by a sensory impression or by a memory-picture. In the least complex reactions, such as those referred to in the infant, the vividness of the sensory impression is proportionately greater than the stimulus derived from memory-pictures. The former is definite and concrete, the latter indefinite and abstract. The study of such cases as that of Laura Bridgman, in whom both vision and hearing were defective, would seem to justify the position that comparatively few sensory impressions are sometimes sufficient to stimulate complex memory and lead to the formation of equally complex concepts and judgments.[1] An individual may be deprived of the various forms of sensory stimulation without suffering from any serious interference with the formation and retention of complex memory-pictures, and may also be the possessor of an apparently undiminished critical faculty. Some authors, however, who have made the phenomena the subject of investigation, have failed to appreciate how diversified and exceedingly important in the development of the mental life of the individual are the so-called organic sensations apart from impressions derived from the visual or auditory areas. The important part that the muscle sense may

[1] Jerusalem, W.: Laura Bridgman. Vienna, Pichler, 1891

play in psychic phenomena has recently been made the subject of considerable investigation, and it would be difficult to overestimate the far-reaching consequences that the organic sensations have upon the mental life of the individual.[3] The changes in the organic sensations and in the muscle sense may so seriously disturb the somato-psychic consciousness as to disorganize connected thought and involve all the more complicated cortical functions.

In abnormal mental states where the imperious and apparently logical character of the ideas would at first lead the observer to believe that the primary disturbance is an intellectual defect, a more careful investigation frequently shows that the primary change is an affective one. This is also true in the conditions where the ideas are immobile and the systematization is marked. In children and in primitive peoples the dominant features in the mental processes are sensations, simple memory-pictures, and affective states. It has been further observed that although isolated and disconnected insane ideas not infrequently exist, the more complicated systematized delusions are practically never met with. A stable elaborated systematized series of insane ideas is an impossible occurrence in children, for, as Schultze[4] has well said, the paranoiic must be a finished builder in the realm of thought. It is always possible to note great variations in the affective life of any individual who subsequently becomes the subject of definite and systematized fixed ideas. In some instances, owing to the change in organic sensation, the patient becomes nervous, restless, irritable, and is thoroughly conscious of the fact that a physical ailment has given rise to some disturbance that inhibits the completion of his mental processes. Gradually this leads to mistrust of himself and then possibly of others. At

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[3] Storch, E.: Muskelfunction und Bewusstsein. Eine Studie zum Mechanismus der Wahrnehmungen. Wiesbaden, 1901. Klage: Ueber den Muskelsinn und über seine Darstellung bei Maupassant. Zschr. f. Psych., Ix. S. 414.

[4] Bemerkungen zur Paranoiafrage. Deutsch. med. Wchnschr., Januar 14 und 21, 1904. *Nr.* 3 und 4.

times we meet with cases in which a mild degree of apprehensiveness or anxiety is constantly present. Frequently it is impossible to define the exact mental state of the patient except to say that there is an indefinite sense of unrest present which serves to fasten or tetanize the attention. Then external sensory impressions, particularly those which on account of the surrounding circumstances fall within the focus of the attention, seem to grow more vivid than normal. As a result of this condition changes occurring in the patient's own body, or certain events that transpire in the external world, receive from him more than their share of attention. The individual's normal sensibility is necessarily disturbed, and as a result the original notion in consciousness is transformed and gives birth to a new idea which springs into being so richly colored by an emotional setting as not to be easily displaced or corrected. This process is naturally a progressive one. Clinical observations do not tend to confirm the view that these disturbances in intellection only appear when there is evident a general and uniform impairment of all the mental processes, although as the systematization is developed such a condition may present itself. The intimate relation that exists between the emotional tone and the idea is shown in the occurrences of every-day life or in discussions on political or religious questions.[3] Lecky, Draper, and others have shown how important a part these phenomena have played in the history of the race, and every reader is doubtless familiar with the various outbreaks, more or less paroxysmal in character, of aberration which have occurred in history. The beliefs in demoniac possession, witchcraft, and the evil eye, so current in the middle ages, and the various manias of modern times,—for instance, spiritualism or Christian Science,—which at times have played an important rôle in the development of nations, are familiar examples. The limitations in the field of consciousness and the riveting of the attention upon some one idea are phenomena that are of frequent occurrence in women and hypersensitive men, and, as Friedman has

[3] Friedman, M.: Ueber Wahnideen im Völkerleben. Wiesbaden, 1901.

pointed out, are met with even in animals; for example, in the antelope standing motionless and watching the approaching caravan oblivious of danger, or the deer held spell-bound by the flash of a lantern.

Primarily, all defects in intellect or judgment are necessarily associated with defects or changes in consciousness or in associative memory. Wernicke* has affirmed that in the cases of insanity which are characterized by marked defects in what is commonly called judgment, the content is impaired, while the activity of consciousness is normal. Such a distinction is misleading, as it necessarily involves a debate concerning the appropriate use of terms that are themselves more or less indefinite and merely relative.

Since in all cases of alienation the personality as such suffers, not only should the content of the insane idea be noted, but also the attempt should always be made to study the synchronous changes that have occurred in the complex of sensations upon which the idea of personality depends. The ego is never constant, varying as the elaboration of sensory impressions becomes keener and the activity of associative memory greater. For example, the belief of children or primitive peoples in ghosts or spirits may readily be explained on the ground that the material furnished by the senses has not been sufficiently elaborated and associative memory has not been actively stimulated to retain abstract ideas from which comparisons and rational judgments may be formed. As the cerebral functions develop and the child receives, retains, and, as need arises, develops these more complex memory-pictures, it becomes able to correct its false impressions as to the existence of such spirits. But when an individual in the prime of life complains that he has been maltreated and tormented by invisible spirits, that the room is haunted by ghosts of departed friends, that he cannot write a letter without being assailed by unseen agencies, the cause of the incorrigibility of these ideas must be sought for not

* Grundriss der Psychiatrie, 1900, S. 110.

only in the greater intensity of the representations, but in the more or less complete dissociation of his entire individuality. What psychiatry needs above all things at present is a rigid study of cases, but without attempts to form any broad generalizations. The mere narration in a clinical history of the content of the insane idea is an isolated fact of comparatively small value.

Recently considerable attention has been directed to the importance of the disturbances giving rise to anomalies of personality. From an historical stand-point it is interesting to note that as long ago as 1873 the significance of the changes in organic sensations which form the basis of this depersonalization was emphasized by Krishaber,[7] a laryngologist and a favorite student of Claude Bernard. More recently the work of Janet, Head,[8] and Pick[9] has forcibly redirected attention to the great importance of these alterations of organic sensibility. Unfortunately, as a rule, so few individuals afflicted with insane ideas come under the observation of the alienist until the systematization is more or less complete and immobile, that little satisfactory progress has been made in the study of the development of these phenomena. For this reason the large amount of material which presents itself at the dispensaries of any of the large city hospitals is of greater value for study than are the cases which are admitted to our hospitals for the insane. In practically every case of alienation which comes under observation early in the development of the malady it will be found that the patient frequently complains of changes in the organic sensations of such a nature as to interfere with the integrity of the sensations upon which the idea of individuality depends. In cases of manic-depressive insanity, dementia præcox, and dementia paralytica, which have early come under observation at the dispensary of

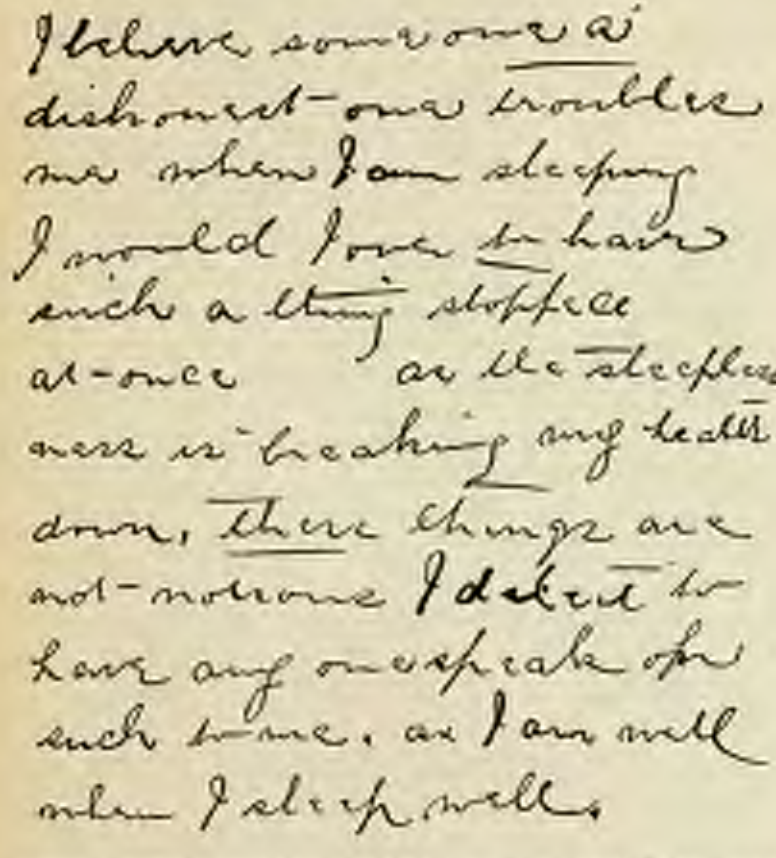
[7] De la Névropathie cérébro-cardiaque, 1873. Granier: Essai sur la Névropathie cérébro-cardiaque ou Maladie de Krishaber, 1903.

[8] Op. cit.

[9] Pick, A.: Neurol. Centralbl., 1903, Nr. 1: Zur Pathologie des Ich-Bewusstseins. Arch. f. Psych. u. Nervenkrankh., 1904, H. 1.

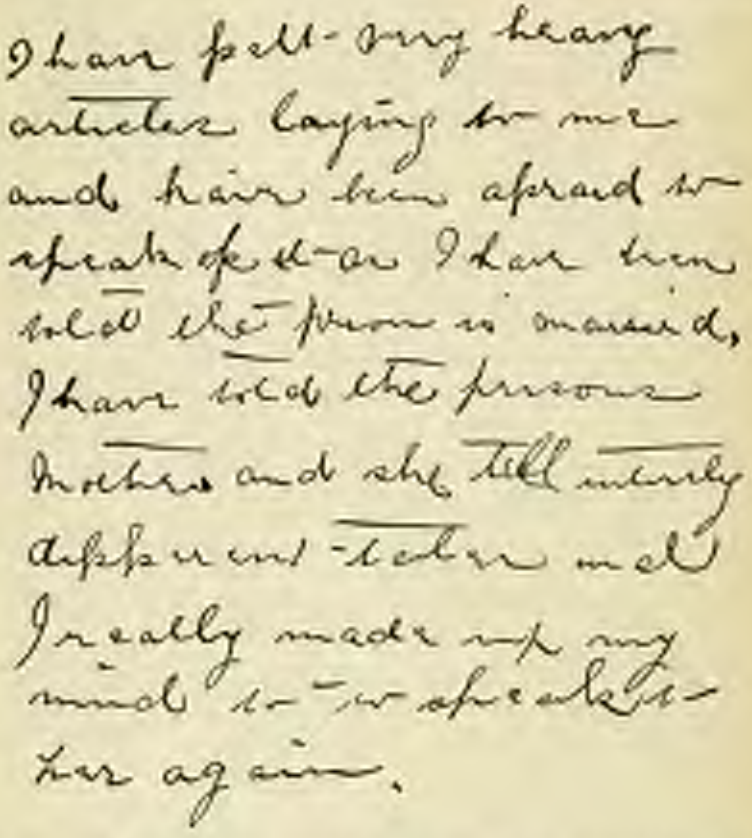
the Johns Hopkins Hospital, we have been particularly struck with the remarkable change occurring in the organic sensations. Of this the following case affords an excellent example:

A certain young woman who at a very early stage came under observation, and whose subsequent history showed the case to be one of dementia



precox, frequently complained that she did not "feel herself," that "something was changing," and that there was "something the matter with the brain." After several visits to the dispensary her sister informed the examining physician that the patient had suddenly developed suspicions, the nature of which it was at first difficult to ascertain, but which on careful inquiry were found to be of a sexual character. After several unsuccessful attempts had been made to get the patient to give an account of her symp-

room, the request was finally complied with and the extracts from the autamnesis, which are given here, afford an interesting revelation of the genesis of these ideas. The patient lived on the second floor of a small tenement house, so that when she was lying in bed at night she heard sounds made by the other boarders going up and down the stairs. Most of them were men, and as the patient was kept awake by the continuous tramping up and down the stairs she became very nervous, dreaded going



to bed, and finally became vaguely suspicious that an attempt was being made to annoy her. One night, having experienced a feeling of suffocation, she suddenly awoke, and immediately thought that somebody had thrown a heavy blanket over her. During the remainder of the night she was more nervous than usual, so that the next morning, on leaving her apartment and meeting a young man who chanced to live in the same tenement, her suspicions were at once directed against him, although later the patient admitted that these suspicions were groundless. Although in describing

these ideas the patient did so in a tone which seemed to indicate embarrassment and a disinclination to talk about such matters, on close examination it at once became apparent that this emotional state was largely superficial, and that in reality slight indifference and apathy with a more or less complete change in her whole personality existed. One day, while being questioned in the clinic, the patient suddenly sprang from her chair and asked in an excited way who was concealed behind the curtain. Although

I have had bad dreams at night
which awakened me
suddenly and heard a noise
on the stairs often thought—
some one had fell—my mom
I have been very much frightened
at times and would go to
Mamma and she'd put her

assured that no one was there, it was some time before she could be made to go and look for herself. In a few minutes, however, she seemed to realize that her action was foolish, and said to the examiner that she felt some change, which she could not explain, had taken place in her head, and that in fact her "whole person seemed to be changing." The accompanying short account written by the patient accentuates certain of the more prominent defects, such as impairment in associative memory and the vague suspiciousness.

An important feature of these disturbances is the marked perversion of "the sense of self-activity" which is present in all normal individuals. According to Bryant,[10] self-consciousness includes all those feelings of agency or directed energy attending every voluntary act. Undoubtedly it is a lack of this sense which is largely responsible for the feelings that many patients have that they are mere automatons or are no

[10] Mind, 1897.

longer the masters of their own activity. Since the days of Zeller and Griesinger, the attention of alienists has been directed to what the earlier observers called psychic anæsthesias, states intimately associated with this depersonalization, in which there is a reduction or complete obliteration of many of the facts of consciousness. Such conditions exist in melancholias, giving color to the fixed ideas and playing an important rôle in the delirium of negation. The importance of these psychic anæsthesias or paræsthesias in the development of insane ideas is frequently well illustrated in the prodromal period of epileptic seizures, a classic example of which is the case of Crichton Browne, referred to in his Cavendish lecture on Dreamy Mental States.[11]

The patient, a youth, said he was subject to frightful feelings associated with a loss of personal identity, and affirmed that he frequently seemed to lose his hold of the universe and did not know who he was. Everything changed in a twinkling; both spatial and time relations were completely disturbed. He was overwhelmed by a sense of terror and a feeling that he could never become himself again. These dreadful sensations invariably came on when he was alone, and sometimes would be induced if he looked intently at himself in a looking-glass. His sister had similar attacks, with a temporary loss of the sense of personal identity.

The *insane idea* has been defined as an abnormal, incorrigible representation—incorrigible even when the possessor of the idea is confronted by plain, indubitable evidence to the contrary. As has been already pointed out, the decision regarding the normal or abnormal character of the idea, particularly if an abstract one, can not be based merely upon the content. Mercier has said that "insanity does not consist in delusion, but in the disorder of the thinking process which results in delusion."

The transition that frequently takes place from the unreal to the real may be gradual or may be accomplished in the twinkling of an eye. Although there are many theories by which the attempt is made to explain the series of changes which result in this transformation, none of them is satisfac-

[11] The Lancet, July 6, 13, 1895, Nos. 3749, 3750.

tory. The more detailed examinations made at the bedside are necessary to throw the desired light upon these highly complex phenomena. Much valuable information could undoubtedly be obtained from a closer observation of delirious patients in the wards of general hospitals. The following history is of interest as it shows the abrupt change that occurred in a case of acute alcoholism.

The patient, a woman, was under observation at the Sheppard and Enoch Pratt Hospital during a typical attack of delirium tremens, characterized by visual and haptic hallucinations, associated with marked apprehensiveness and fear. During the height of the attack the patient saw a great variety of fantastic and strange figures of human beings as well as of animals. She frequently complained of seeing enormous worms and asked to have them removed from her bed. At first the vividness of the representations in consciousness was very great. Gradually, however, it became less and less, until finally the patient, although occasionally declaring that she still saw the same dreadful objects, did not show any degree of emotion. After the hallucinations had entirely vanished, the patient affirmed that she remembered distinctly the instant when the idea came to her that the figures she had seen were not real. On being closely questioned, she maintained that this transformation was due in part to the decrease in the vividness of the representations. Associated with this there was also a marked alteration in organic sensations, and she became immediately conscious of "feeling differently."

The change that occurs in the chronic psychoses takes place much more gradually, and the patient is frequently unable to assign a definite time at which a sufficient insight is gained into his own condition to enable him to differentiate the real from the unreal.

Sometimes the sense of reality fluctuates, being now more, now less intense as the affective state changes. For example, in one instance, if the attention was allowed to lapse, the individual became quite passive and the objective evidence of suspiciousness rapidly faded away, only to be revived with intensity whenever an incident stimulus served to awaken his attention. At first the individual became confused, next anxiously expectant, and then—sometimes quickly, again more slowly—definite suspicions crystallized and became so intense as to dominate his conduct. The account that follows was

written by the patient while in an excited condition. A few minutes later, when asked if his suspicions might not be without foundation and merely notions that had developed as the result of his nervousness, he admitted that such an explanation was not improbable.

"My mental confusion becomes great if excited and this throws me into a condition I cannot describe. I went to * * * on a visit to my uncle's. There I was led about in my hearing, then drugged and when I spoke to my uncle about what I heard, I was told it was a mistake and could not make anything of the whole business. I had had similar trouble before this but not so great. I wished to leave but was prevailed upon not to do so for a while. Finally my uncle came back with me himself when I was in a drugged condition. There was all manner of talk of the most vulgar description as well as in terms of the highest praise of which I could make nothing. I felt incapable of doing anything for myself and my uncle had sworn before God to act the part of a father to me. I reached home in a dazed condition, went to bed and stayed there a while. Dr. C. came to see me and then for the first time I began to believe that all men were liars. My sister, Mrs. B., was a rational person and helped me out for a few days. The rest of my family thought I was crazy or at least unbalanced."

The evident reflex influence of the affective state in enabling the patient to intrench himself behind all barriers to reason is evident even in the so-called paranoiic states that have persisted for years.

The transition from the real to the unreal and the correspondingly slow regressive changes in the critical faculties are frequently illustrated in the clinic. The following autobiographical notes, written by a patient recovering from an attack of manic-depressive insanity, illustrate this latter type in the evolution of the insane ideas. Many of the expressions used by the patient give at least an inkling concerning the pathogenesis of some of the fixed and insane ideas to which patients similarly afflicted are subject. The patient admitted that even in the earlier years of her life she had shown slight eccentricities in character and had had some difficulty in connected thought. This is an important point, as it serves to emphasize a more or less common truth to the effect that even in the more acute psychoses the abnormalities that become marked during

the height of the disease are in reality merely accentuations of defects which have existed in embryo for some time prior to the acute outbreak of the malady. (The spelling and phraseology used by the patient have not been changed. The great prolixity and circumstantiality are evident.)

"I will endeavor to give a brief sketch of my whole life as I think certain things which have happened in my life no doubt had a great deal to do with my present illness.

"When my mind developed sufficiently to enable me to reason intelligently, religion appealed to me strongly. From childhood my one desire was to be a true Christian and naturally the habit in my childhood worried me considerably. I was always very emotional, the most simple sermon affecting me. I thought I had committed a great sin and at different periods of my life producing such depression that I feared if I did not tell my mother I would not go to Heaven when I died, but I could not tell her. I did not want her to know she had such a bad child. During the summer of my 14th year I remember one day feeling very much depressed over my childhood, but it passed away and I was as happy as any other child.

"Another time very clearly I was about seventeen years old and in the second year High School. I was taken sick with throat trouble about a week previous to the final examinations, and I was very much worried about losing so much time which made me very nervous. . . .

"During this time that same old thing distressed me again, I got very much better of my nervousness and went to the seashore. When I returned I took up school work again and whether I knew my lesson or not, I became very nervous when I rose to recite, so I left school in October. About a year after that I took up stenography and made a fair success of it holding my last position for two years and a half and leaving on account of financial difficulties in the firm, which happened in July, 1903. Previous to this in March, 1903, my mother's mother died and I spent a great deal of time at her bedside before her death. My mother was then taken seriously ill in April with erysipelas being delirious most of the time and taxing my strength to the utmost. I slept very little in the two months my mother was sick and missed very little time from the office. My mother began to improve in June. I went to the country the last of July and remained there for six weeks thoroughly enjoying my long vacation, being the first one in two years.

"When I returned home I found my mother extremely nervous and my family thought best for me to give up stenography for a while and relieve her of the responsibility of housekeeping, but my mother objected to this plan as she thought I was not capable of keeping house, being the truth no doubt, but I was willing to learn. I saw how everything was being mismanaged, the servant drinking most of her time and neglecting her work, and my mother too weak physically to care much yet insisted I should not do the managing I then begged my mother to get rid of this woman, but being almost impossible to get another one, we kept her, and

she became very much worse. I did not like to cross my mother or worry my brothers with domestic affairs and had to bear it alone. I saw clearly my duty and was not allowed to carry it into effect, although I felt I must change existing conditions in some way; so I began with the servant thinking perhaps I might *help her to lead a better life*, but made very little progress in that direction; I then concluded *I was neither capable nor good enough to change anything*, or *help anybody*. This caused me to be very much depressed; pleasure of no kind interested me, reading did not divert my mind and at last found it impossible to do anything until I had reformed this servant. I thought if she became better other things would change. *In the morning I would feel better than at any other time*, that is to say, I wasn't despondent. I would wake very *early in the morning, feeling the greatest remorse* about what I had done in *my childhood and almost choking with emotion*, causing a very bad effect upon my bowels and I was simply impelled to tell my mother. She gave me very good advice and told me not to think of things which happened so long ago. I felt a little comfortable but still very much depressed. I still could do nothing.

"I have been a member of church since I was fourteen years old, and I thought I had become an awful hypocrite and must make a *public confession* of it ere I could eventually be saved, so on the next Sunday morning I broke down and told my minister I was a hypocrite, but this did not relieve my mind, and early Monday morning when I awoke I tried to pray and could not and went into my mother's room and told her I was bad and hadn't surrendered and she could throw my Bible away, as it meant nothing to me any more. In the afternoon when my father returned from business I went to him and begged him to send me away from everybody and I remember him saying 'Send my baby away from me' with the tears rolling down his cheeks. At the supper table *I acted so strangely* that my eldest brother immediately sent for the doctor, who pronounced it nervousness, but I insisted it was only devilishness. He advised my brother either to send me away somewhere or to his sanitarium as it was absolutely necessary to get me away from my mother. I consented to go because I did not want to be at home and after being there for about a week I said I wasn't sick or nervous and *I was committing an awful sin* to remain there, and I was taken away. Now my next great trouble was how to convince my friends that I was not sick. There was a bazar going on at the church at this time and I had been elected chairman of one of the tables, but I could not serve, although when I returned from the sanitarium I went to it feeling miserable, and when my friends inquired after my health, I answered them one and all that I hadn't been sick. The next Sunday I thought if I would make a public confession of everything that I had ever done in my life and how bad I was then God would give me another chance, but my pride would not allow me to humble myself so. I paused and repaced the church several times that morning and would not go in, when I then realized *I was eternally lost*.

"I would do nothing to please my family and as a last resort they sent to * * * for my aunt, knowing I was devoted to both she and her little

boy, and thinking possibly they might have some effect upon me as I had declared I had lost all love for my family. I could hardly bear to think they had gone to so much trouble for me. It was simply impossible to make them believe it was devilishness. My aunt after remaining in * * * for about two days persuaded me to go back with her and being very anxious to get away from everybody I went. I was still awfully depressed having the vilest thoughts and thinking of Hell all the time. I thought God could not punish me too severely for going to * * * and leaving my mother alone. I thought nothing was too bad for me to do *now*. Then the horrible hellish thought that I would eventually become a degraded woman took possession of me and I imagined all the men on the street could read it on my face. I told my aunt every thought I had almost, giving the latter delusion as a reason for not going out, and entering into her social life there. She tried to convince me it was my nerves and I know I must have tried her patience to the utmost, especially as I told *her I felt like murdering* and hated to see any of her friends call and felt like choking them because I was so miserable and unhappy, yet she never complained and would not write home telling them how terrible I was, but because very cross that I didn't. I wrote one letter about myself but she refused to send it, declaring it simply awful.

"Then the *suicidal mania developed*. I thought rather than disgrace my family and friends by becoming such a person, I preferred death. Then I thought it was only a matter of a short time before I would do something very bad and be sent to the penitentiary, and persuaded my aunt to take me to the zoo in * * * and to satisfy my morbid curiosity she did. It was simply living torture to me, as I really envided some of the poor wretches, because I thought some of them had a chance to reform if they wanted to, and I remember my aunt laughingly say to me, 'Well, have you selected your cell?'

"When I read it was generally of murders, suicides and crimes of all kinds and always come to conclusion I was just as bad as any criminal I read about and a great deal worse than some.

"About this time *I did not suffer from remorse, and it worried me as I felt I had lost* all *conscience*. I became indifferent to everything not caring whether I lived or died, or was good or bad. What was so remarkable to me that during this period of indifference I could eat and sleep and I tried to convince my Aunt that if it were my nerves instead of the devil, I would do neither. I went to church only once while in * * * making me feel very badly and I refused to go after that. The Sunday before Christmas my uncle persuaded me to go to church with him but when we got almost there I would not go in, giving as an excuse that I felt nervous. When I left him I intended to jump into the * * * but every time that I seriously contemplated suicide, I was prevented from carrying out my intention by that *awful thought I would go to Hell*, which was worse than *the terrible agony I was then enduring*.

"In the meantime my family became very much alarmed as I refused to come home, or write to them. Sometimes I would add a postcript to aunt's letters, telling how bad I was, but never said anything of the vile

delusion which had developed in * * *, so my brother consulted Dr. X who communicated with Dr. Z of * * * I was not cognizant of this fact then, for had I been I would never have seen him. He came upon me suddenly one Sunday morning, and I was compelled to talk to him. *I thought now all my finer feelings had become benumbed, while my coarser ones predominated and were active at all times*, and as I had lost all the pride I ever had, I concluded to tell him anything that came in my mind, especially about that devilish delusion, and it would take him but a very short time to discover what a devil I was. He argued with me for two hours, using his utmost efforts to impress upon me it was my nerves and not the devil. I remember him saying to me, 'Can't you see that it is just possible the cells of your brain might become diseased like any other part of your body,' but having no power of discernment whatever at that time, how could I comprehend anything? He was very kind and I remember him taking my hands in his trying to comfort me like a father would a distressed child, telling me it was a very serious matter and he was going to write to * * * about me. I thought this rather strange that he should consult another doctor, as my aunt had told me he was considered a bright man. Then the thought came to me that he would write all I had told him and this doctor would in turn tell my family and *to my horror I found I had been caught in a trap*, but I thought God was only beginning to punish me for my terrible wickedness here on earth and expected something dreadful to happen at any moment, and I was not surprised to see my father walk in on New Year's day but very much frightened. When he did not censure me for my badness, and brought no bad news from home I was very much relieved. He told me he had come to take me to a very pretty place outside of * * *, and I was more glad than otherwise, as I had told my aunt to put me away somewhere. I felt I just could not fight against them any longer as it was useless and they believed nothing I told them, so I acquiesced to anything my father proposed.

"While on the train though I told him I had changed my mind and was going home, as I felt I could not be any more trouble and expense to my family. Knowing it would be impossible to remain in seclusion at home any length of time before my friends became aware of it, and *to their sorrow what a vile creature I had become* just by looking in my face, I really intended to take my life by asphyxiation as soon as I got there, believing it was my last opportunity to do so, but when I arrived at * * * my sister and brother-in-law before I could hardly draw my breath put me in a hack and I was brought here. Papa told me I would remain here but a very short time and I thought how true that was, as it would be but a very little while before you found what an imposter I was. Every morning I woke up I expected to be the last one here, as I thought I would be sent from this place in dire disgrace and my family would suffer for putting me here. God would not permit me to deceive so many people, and especially those who were sick. Do you wonder that the first few weeks I hardly spoke to any one and that I wanted to get away but I saw in a very short time, it was impossible and *I was miserable. The first month I would do nothing at all, then I went to the other extreme* working nearly

all day though doing it mechanically as my fancy work did not interest me then in the least, feeling all the time there wasn't any use in living as that vile delusion was constantly with me. *I then became anxious to go to the city for one reason only as I felt it gradually leaving me and I wanted to give myself a fair test, whom to my unbounded delight I found that it had and I could look in any man's face without the slightest self-condemnation.* After I returned the thought came to me that even if I were lost, I might be of some use and derive some pleasure in living for others and I did not worry very much then about being lost. *On Saturday night, about five days previous to my physical collapse*, or whatever you call it, some one was playing the piano and the music impressed me to such an extent I thought what must heavenly music be compared with this and I expressed a wish to Miss * * * next morning I would like to go to some church just to hear the music and shortly after that I realized I wasn't lost. *Oh! what an awakening!*

"*Do you wonder that I am so happy and have such a love for nature and everything beautiful in life after such a horrible nightmare.*

"I have an intense desire for knowledge, and if it is God's will that I get real well and strong, I intend *to be something.*

"Accept my deepest gratitude, and may God bless you and this institution."

What follows, in marked contrast to the preceding, was written several days after the above description had been completed, and at a time when the patient was evidently quite markedly exhilarated and in a very happy frame of mind.

"When I awoke yesterday morning the beauty of the day impressed me immediately and like a bird my first inclination was to herald forth the glory of it.

"After partaking of a very light breakfast, which after assimilation did not have a very good effect upon my internal organs, being aware of this by the sudden feeling of pain, though disappearing after a while, I interested myself in various ways remaining at nothing any length of time. I was anticipating with much pleasure the whole morning a visit from my father in the afternoon, knowing and feeling that he is as delighted as I at my wonderful awakening. Every day I have an increasing sympathy for the patients here, which feeling I did not experience when I first came.

"I then ate my dinner which made me sick and feeling very tired I rested a while after it. Being relieved by the rest my body received I arose and dressed for an afternoon reception as I expected a number of visitors.

"Just before they arrived, however, having the desire of pouring forth some of the melody in my soul which I had felt all day was there but not having the opportunity of expressing, as the only musical instrument attainable was in use the whole morning by one Mrs. * * * who no doubt felt the same as I did, only I thought took an unusually long time in expressing

it, and I got very impatient but my chance came at last and taking advantage of it, I enjoyed and felt intensely the melody I made.

"When my friends arrived we went for a walk, and though going but a very short distance I became very tired. Hereafter, I am afraid I must limit to some extent the number of friends whom I desire to have on these days set apart for receiving as too many excite me for I have neither the physical strength nor the mental ability to entertain more than two or three at one time. I remember we were over on the 'casino' porch and my sister referred several times to something I had promised to do for her several weeks ago and being in rather an exalted state at the present time, material things not appealing to me in the least, I became very cross and nervous when she persisted in it, but the thought came to me at once how ridiculous and weak of me not to have more control of myself. I enjoyed my evening meal and after resting a while after it, several of us strolled over to the casino. The twilight both impressed and affected me to such an extent that I felt a perfect peace and good-will to all man-kind that I think one only feels when they have a deep love for God in their heart and a reverence for His handiwork.

"When we returned, we played cards, being taught by the ladies for the first time the game of euchre and grasping their explanation of it readily, which would have been impossible weeks ago, and in fact my reasoning power is better than ever in my life."

The direct dependence of insane ideas upon anomalies in organic sensations is frequently shown in protracted cases of manic-depressive insanity, and finds its best exemplification in instances where there is a "crossing of symptoms," such as psychomotor excitement with the feeling of depression and limitations in connected thought.[12] In such instances it becomes clearly apparent that the mere increase in intensity of an intestinal sensation is not sufficient to account for the development of an insane idea, but its presence indicates the latency of other factors, such as inhibition and mental depression. If the mere accentuation in the value of the sensation were the sole causative factor, insane ideas would be common in those neuroses in which there is a marked hyperæsthesia in the realm of the organic sensibility.

The clinical characteristics of the majority of insane or fixed ideas are easily recognizable, although the basis upon

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[12] Pfersdorff, K.: Ueber intestinale Wahnideen in manisch-depressiven Irresein. Centralbl. f. Nervenheilk. u. Psych., März, 1904.

which they are classified is purely an empirical one, adopted with the sole idea of facilitating description. Some observers think that they are capable of being divided into two groups, to one of which belong all those ideas which are of a more or less pleasant character and to the other those of an unpleasant nature. The former, including those in which the ideas are associated with states of exhilaration, an increased sense of well-being and pleasurable sensations, are much less often of forensic importance than are the latter, where suspicions, ideas of persecution, and so on, are apt to bring the patient into conflict with his environment. Another important point from the clinical stand-point, and which has reference to their genesis, is that some of the ideas are apparently primary in character, while others are secondary, developing as a result of hallucinations or preëxisting ideas.

The following history, accompanied by the patient's own interpretation of his mental disorder, is a graphic illustration of the development of certain states of suspiciousness and the subsequent well-defined ideas of persecution. For various reasons the history has been considerably abbreviated.

For several years the patient had exhibited symptoms of nervousness and emotional instability. This was said to be due to a disappointment he had experienced in not receiving a position. An indefinite history of a somewhat similar attack was obtained, occurring six months prior to the present illness. The causes of the present illness, as already stated, were said to be disappointment and a tendency to brood over supposed troubles. Later it had been noted that the patient was suspicious of people with whom he came into contact, and attributed, very unjustly, certain motives to them, such as a desire to annoy and persecute him. One day a stranger entered the building where the patient was acting as watchman and accosted him in a friendly manner. The patient at once became excited, and when the stranger in a familiar way placed his hand upon his shoulder the patient thought it was for an improper purpose and immediately assaulted his interrogator. The patient was at once taken into custody, and after examination was transferred to the Sheppard and Enoch Pratt Hospital, where he was admitted on September 1, 1903. He was found to be in a very emotional state, claimed that he had been the subject of conspiracy, but that he would unearth the scheme even if violence were necessary. On September 6 the patient was quiet and jovial, greeting the physician and attendants cordially and affirming that the hospital was a "grand place for rest." On the following day he again became excited, declared that he had been

persecuted, and wished to get out a writ of habeas corpus, as he had a "strong case against the hospital for illegal detention." He was very insistent, declaring that everything had been done to annoy him and to "tear his clothes to pieces," but that his indomitable will-power had held him together. Furthermore, he declared that he had not slept two hours since he had been in the institution, and that lights were flashed into his room and kept him awake. He said that when he took a bath the attendants squirted muddy water into the bath as soon as he got in. He refused to take medicine after the first dose, declaring that half an hour after it had been taken he felt everything giving way inside of him. He became greatly excited while talking and shook his fist in the attendant's face. He admitted that he was never suspicious before he came to the hospital, but on this occasion he was suspicious of every movement and act and would believe nothing that was told him. The emotional states varied, the patient sometimes complying with requests, at other times refusing absolutely to do as he was bid. On October 10 he narrated to the examining physician the circumstances relating to the trouble which resulted in his being brought to the hospital. When asked who the examining physician was he at once declared that he was the book-keeper, but would not give any reason for maintaining this position. When pressed for an answer he was quiet for a time, apparently absorbed in his own thoughts, and then replied, "Gentlemen, you are interfering with my work. I must be going," and immediately started to walk up and down the corridor. The following week, when again visited by the same physician, the patient at once addressed him as "Mr. X." "That is who you are; you are the book-keeper for the hospital." He firmly maintained that the doctor had an object in deceiving him, but would give no reason for his belief. A few days after this he affirmed that the questions which had been asked him by the physician the preceding week had caused him to have "pyrotechnics," owing to which he had been obliged to remain in bed all day.

Note of December 4. The patient has improved remarkably in the last few weeks; admits that all of his former delusions were foolish and laughs at them.

From this date until his discharge (January 13) recovery was uninterrupted. The following account was given by the patient himself, and emphasizes some of the important points connected with the genesis of his delusions. (The patient had only had a common-school education.)

"When I entered the Hospital I was for the first night and day placed in the second ward. I slept in the Dormitory on the evening of the next day I was transferred to the first ward and on the following morning I was transferred to the fourth ward. I spent about five days there when I was placed in third ward for acting in a disorderly manner and accusing Mr. X of having evil designs on me. This was imaginary on my part as he was simply trying to induce me to eat more; on the second day of my stay on the third ward it suddenly struck me that I should do something to employ my mind noticing the marks of many kinds on the walls of the room I occupied, I commenced to count them when I reached a hundred I would repeat. I found this helped me to a great extent or I at least thought so.

I was transferred to second ward and after spending a few days in a despondent mood the same idea of counting up to one hundred and repeating occurred to me again; this I followed and continued for some time—then I conceived the idea that by employing my mind and exercising my body I could hasten my cure at this time I began to suspect all of the attendants and some of the patients of trying to retard my recovery. This only made me more determined than ever to get well so I continued my exercises a short time after this I saw Dr. A for the first time he was examining the eyes of Mr. H. To me at that time he appeared the specialist a short time after this he again visited the ward, in the meantime I had heard the name of * * * When I saw Dr. A the second time and was questioned by him it suddenly entered my mind that he was Mr. F. I told him so and that he was a book-keeper—not a doctor—the Saturday following I again saw Dr. A but refused to believe he was such a person—I had taken a dislike to Mr. X from the first time I saw him so when on the night of October 18th I saw him turn off the electric light in front of Dormitory I thought this meant my return to Dormitory to be followed by a transfer to ward 3d—this I determined to prevent by supressing my condition by constant exercise so I started to walk the corridor up and down at time P.M. I retired to rest and slept soundly until six o'clock A.M. when I awoke I realized after some thought that I had been suffering with hallucinations from that morning I continued to improve both in mind and body and at the present time I feel as well as if not better than I have felt in three years—I want to say the feeling of resentment entertained by me towards Mr. X has been changed to admiration and respect."

Some of the delusions in rare instances seem completely to annihilate the idea of personality. The past is obliterated, and the individual no longer retains any knowledge of his former self and thus exhibits a more or less definite dual personality. Such complete changes are noticed in the wandering mania of hysteria or epilepsy and in certain other psychoses. Generally, however, the insane idea seems to involve only a part of the individuality: an arm or a leg becomes glass; the contents of the skull have been changed; voices are located in the abdominal cavity. Again, in other instances, the relation of the individual to his environment becomes the subject of mental aberration, which may assume a pleasant or an unpleasant character. When the former occurs, the patient's idea of well-being, of his personal worthiness, of his competence, are all intensified, and may become so greatly exaggerated that he becomes Hercules, Napoleon, or Rothschild, and even assumes supernatural powers (megalomania).

In the antithetical states the change is of an entirely different character. The sense of well-being is then impaired and the consciousness of organic processes becomes painfully intensified (micromania). The material wants are ill supplied. Such patients declare they are impoverished, utterly worthless, they have lost all their physical and mental vigor, have committed unpardonable sins, and the like.

Again, the insane ideas indicate an inimical relation of the individual's environment to himself. Thus are formed various suspicions, in some instances vague and general, in others definite, well-defined, systematized, and imperious in character. In the milder cases there is simply general distrust; but in the latter there are definite delusions of persecution which drive the individual to the commission of overt acts. The more specific characteristics of these systematized ideas are described in the consideration of the various types of alienation.

II. ANOMALIES IN THE INTENSITY AND DIRECTION OF THE MENTAL PROCESSES AS SHOWN IN DISORDERS OF THE ATTENTION.

The phenomena of the attention are to be regarded not only as the weather-vanes that indicate the direction of the mental processes, but also as gauges by which the intensity and volume of the latter are measured. In different individuals there is a wide latitude within which fluctuations may occur, so that even normally there exist personal idiosyncrasies and modifications in the stream of attention, these personal variations being referable to distinctive dissimilarities in the functional capacities of the nervous system. Nor is it unnatural that inheritance and acquisition should bring about a difference in the manner in which two given organisms will respond to similar stimuli. In the one instance certain needs and trends arise that do not exist in the other. One person attends with ease to a certain subject, while a second fails utterly in the attempt. During the waking states the brain is constantly active and never ceases to operate; its energy

flows first in one, then in another direction. Incident stimuli of intra- as well as extra-organic origin are received and in some instances retained. In one case the incident stimulus is like the spent arrow striking the mark, but unable to penetrate it. In another, the shaft sinks deeply beneath the surface and a permanent impression remains. This is the beginning of a complex train of thought that may be rich in possible connections. Normally, if the energy is flowing strongly in one direction, a new stimulus of only ordinary strength will fail to divert the flow from a given channel. In cases of alienation, however, the flow is often so superficial that the slightest resistance interposed is sufficient to change the course of the stream. The never-ceasing, uninterrupted activity of the cerebral functions is as constant as the cardiac action or the movements of respiration. If the heart's action becomes irregular or the breathing labored, there is no general rule by which the intensity of these phenomena can be measured and no single term by which each special occurrence can be described. Nor is it unnatural that the same should be true for the attention. Physiology has shown that the forces, the combination of which is designated as attention, in reality represent the coefficient that indicates the functional capacity of the brain. When the activities of the higher brain centres are in abeyance, as in sleep or states of unconsciousness, there is no such thing as attention. Stimuli impinge upon the cerebral cortex but no reaction follows. Impressions must be retained, elaborated, and brought into connection with other psychic unities, so that before they can determine the flow of attention the stimuli must be of sufficient strength and the activity of the brain capable of responding. In health all the conditions are favorable. The attention flows along certain channels which are primarily determined by inherent qualities as well as by those acquired through education. In various states the attention or flow of energy is dissipated; and even if the stimuli are of such strength that under normal conditions they would awaken a response, they now fail to bring about any synthesis or connected train of thought. This lowering of the

power of elaboration and of the working up of stimuli may be temporary, as in states of drowsiness or fatigue, or may be permanent, as, for example, in various forms of dementia.

Not only is attention necessary for thought, but it is a factor in all volitional acts. Thought without attention is inconceivable. The amount and intensity of the flow of energy gives character to the thought. When there is a shallow or more or less diffuse discharge of energy our impressions are faint; they scarcely rise above the so-called threshold and are easily forgotten. These faint and imperfectly elaborated impressions are frequently referred to as sub-conscious. There is nothing startling or inexplicable about them. It is the faintness of the impression which makes them elusive, and the indefinable becomes the source of a certain degree of mystery. Such expressions as unconscious mind or sub-conscious thought are meaningless—they are simply a play upon words. Attention is associated with every mental process. A sensation implies the existence of a certain degree of attention. Some of the phenomena included under this term may be described, but cannot be categorically defined. If the intra-organic stimuli were abolished, there would be no attention, and without this drift or set in the current sensory stimulation would create no appreciable effect.

Although our minds are constantly flooded with a stream of sensory impressions, all do not attain equal vividness nor are they retained in memory. At one time this, at another time that, object occupies the field of attention. This selection is not volitional, but is determined for us by a variety of causes that depend upon the physical properties of the brain. The power to receive and retain new ideas may be termed the *recording faculty* (the Merkfähigkeit of Wernicke). The *vigility* of the attention is a term used by some clinicians to indicate the fact that the direction of the stream of energy is dirigible. The *tenacity* refers to the length of time during which the current sets in a given direction. Decrease in vigility (Hypovigility) is noted in various conditions. It is a common symptom of fatigue, as a consequence of which stim-

ulli stronger than those normally needed are required to direct and augment the flow. The influence of various drugs, particularly opium and the bromides, may also be productive of similar results. The tenacity or persistence of the attention is profoundly affected in various forms of alienation. Not only is this true in well-marked psychoses, but frequently also in various functional neuroses—hysteria and neurasthenia. Not uncommonly vigility and tenacity are both affected, giving rise to a condition called aprosexia. In this condition stimuli produce little or no effect upon the cerebral functions; response is reduced to a minimum, and if under abnormally intensified stimuli a reaction follows, it is isolated and unproductive.

In certain excited conditions the slightest stimulus produces an immediate reaction. Waves spread in all directions as soon as the surface is broken by a ripple. This hypervigility is common in neurasthenia, alcoholism, mania, and various other conditions. As a rule, the tenacity is decreased rather than increased. Each new impression serves to deflect the attention. This phenomenon has been designated *hyperprosexia*. The patients in whom this symptom is marked take everything in at a glance, pass with lightning-like rapidity from one object to another, but are strangely deficient in the power to carefully examine the details of any one of them.

In some conditions, particularly in cases of hallucination, the attention seems to be firmly riveted upon the object occupying the field. The tenacity is increased while the vigility is essentially lowered.

III. DISTURBANCES OF SENSATION, INCLUDING HALLUCINATIONS.

The interest of the alienist is practically centred in three phases of the physiology of sensation; in the first place, he studies the facts connected with the reception and transmission of stimuli, either intra- or extra-organic in nature, from their point of origin to the central termination of the sensory tract; secondly, he is directly concerned with the investigation of the nature of the transformation of these impulses and their

elaboration and relation to the various psychical activities; and, finally, he endeavors to correlate the relationship that exists between the associative activities of the brain and their objective expression in reflex or volitional acts. This threefold division of function is empirical. The clinician should recognize that there is a difference of degree but not of kind in all three, but while admitting the necessity of employing terms to designate the phenomena of sensation, he should never lose sight of the fact that the expressions employed are merely relative. Clinically, the main interest is directed to the fact that stimuli under certain conditions give rise to a series of psychic events which are called sensations. It is impossible to even enumerate the different steps that occur in the transformation and elaboration of simple sensations into the most complex of psychic phenomena. The gradations hitherto established are purely artificial. For all that is known to the contrary, the only form of cerebral function of which we are cognizant is that of associative memory.[13] The fact cannot be emphasized too frequently that in describing sensory phenomena terms are used merely to designate a connection or series of relationships between the psychic elements that is never constant, but is always in a state of flux. Whenever possible it is advisable to substitute a terminology not limited in its application and significance by special use. In recording clinical observations a phraseology chosen from the vocabulary of the physiologists is preferable to that in vogue among the psychologists.

In a study of sensation three paths of investigation may be followed: (1) we may content ourselves with analyzing and recording the mental phenomena; (2) we may make the physical processes which give rise to the sensation the subject of special inquiry; or (3) we may employ a combination of these two methods and thus obtain, as experience has demonstrated, the most satisfactory results by correlating as far as

[13] Loeb, Jacques: The Physiology of the Brain. The Science Series, G. P. Putnam's Sons, 1900.

possible the psychic and the physical processes. Every sensation is made up of a certain number of elements. These elements are physical processes—for example, sound or light waves. Not only are our sensations formed by the union of elements, but more complicated psychic phenomena, generally referred to as volition, ideas, and emotions, may be similarly analyzed. Between the physical processes or stimulus, on the one hand, and the most complicated volitional acts, on the other, there is an unbroken chain. A few of the links are recognized; many are not, but the inference that the continuity of this chain is unbroken is a safe and warrantable deduction. Sensations are the first link in the chain of mental phenomena. It is, therefore, natural that they should first be made the subject of investigation before considering more complex mental processes. Sensations are the most elementary form of all our psychic activities and are the functional elements of consciousness. The recognition of the fact that sensations cannot be isolated from other mental processes and studied by themselves is a matter of practical as well as of theoretical interest. "They cannot arise in consciousness without the simultaneous occurrence of thought, attention, memory, and pleasure or pain" (Mercier). They form an integral part of all the complicated associative cerebral activities and must be studied in their relation to other phenomena—the attention, feelings, emotions, etc. Not only is this true, but the concurrent variance in the physical states must also be carefully investigated.

Under normal conditions, when a stimulus of sufficient strength, originating either within or without the body, is received and transmitted by the conducting nerves to the cerebral cortex, a sense perception is the result. Gustave Spiller [14] has justly emphasized the necessity of keeping clearly before our minds the variety as well as the complexity of the transformations that may occur in the impulse, and of which we

[14] Spiller, Gustave: Mind of Man. London, Swan, Sonnenschein & Co., Limited: New York, Macmillan & Co., 1902, p. 134.

have only the vaguest inkling. The nervous system should be compared to a vast factory, and not to a mere telegraphic network.

With but few exceptions, physiologists until recently have accepted the hypothesis first enunciated by Weber, but generally associated with the name of Johannes Müller, to the effect that different stimuli when acting upon the same sense organ give rise to specific sensations. Helmholtz was the first to suggest certain modifications of this doctrine of the specific energy of the nerve-centres in order to explain tone and light perceptions. This investigator held that certain modifications took place in the impulse during its transmission through the receiving and transmitting organs. He even went so far as to affirm that in certain cases the sensory cellular elements in the cerebral cortex might change the character of the impulse. Other workers have formulated more definite objections to this doctrine. Wundt,[15] basing his belief upon the facts known regarding the development of the sensory areas, affirms that as these complex centres develop from simple and similar structures, they do so only in response to external stimuli. From this the deduction follows that as the quality of the sensation is thus determined secondarily by the results of external stimuli, the hypothesis that predicates belief in the inherent specific energy of the nerve-centres is incompatible with the facts. The argument is carried still further, and attention is directed to the point that great diversity in the character of sense perceptions can not be explained merely by a corresponding difference in the individual sensory elements. The objection of clinical importance, to the effect that those born blind or deaf, even if the sensory nerves connecting the end organ and the centres are intact, are devoid of appreciation of both auditory and visual perceptions, is a serious drawback to the acceptance of the theory.

The intensity and quality of our sense perceptions depend

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[15] Wundt: Grundriss der Psychologie. Fünfte Auflage. Leipzig, 1902.

upon several factors: (1) the stimulus; (2) the receptive and transmitting capacity of the nerve tract which joins the peripheral sensory organ with its central area; and (3) what Huxley has called the sensifacient capacity of the cerebral cortex.

Every sensation is commonly said to have certain characteristics: quality, intensity, space attributes, duration, and, finally, a tone feeling of either pleasure or pain. These attributes, singly or in combination, may be affected by disturbances occurring within the body during the course of an alienation. In order that a stimulus may be appreciated, it must have a certain strength. This is generally expressed by saying that the sensation rises above the threshold of consciousness. In physiological terms this is equivalent to affirming that the strength of the stimulus has been sufficient to produce in the normal functioning nerve-centres a responsive action. In other words, a definite connection between the different processes, called memory, feeling, and sensation, has been established. Should the responsive action of the nerve-centres be impaired by disease or the conduction of the impulse rendered difficult, the connections normally established do not exist and the sensation never rises above the threshold of consciousness. The physiological processes which are a part of the sensation do not cease at the instant that the threshold of consciousness is passed, but have a tendency to persist—a phenomenon of practical importance.[38]

Every alienist is familiar with the fact that in certain cases, particularly in dementia or in profound mental depression, a considerable time may elapse from the instant that the stimulus impinges upon the peripheral receiving organ until there is objective evidence of its appearance in consciousness. It is not improbable that chemical changes occurring in the tissues interpose greater resistance to the transmission of the stimulus. A delay may also occur in the birth, elaboration, and discharge of the afferent impulse.

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[38] Müller, G. E., and A. Pilzecker: Experim. Beiträge zur Lehre vom Gedächtnis. Ztschr. f. Psych., etc., 1900, Ergänzungsband I.

In the congenital defect psychoses, such as idiocy, imbecility, etc., the sensifacient activity of the cortex is unquestionably impaired by its incomplete development and the persistence in some instances of embryonal types of the neural elements. In other cases the imperception is the result of regressive cortical changes. It is not at all improbable in still other cases that the diminished functional activity is the result of an increased resistance to the conduction of impulses situated in the nerves themselves. Lesions not infrequently occur during the course of alienation that give rise to disturbances in the sensory areas supplied by the peripheral nerves—in Korsakow's psychosis, etc. The disorders of this nature are fully treated of in the text-books on neurology.

Disturbances in sense perception occur in various forms of alienation that are not referable to lesions in the conducting tracts, but are psychically conditioned. These are called psycho-anæsthesias, psycho-hyperæsthesias, and psycho-algias.[17] The cutaneous sensibility is, as a rule, intact. Impairment of consciousness and the deflection of the patient's attention in a large measure give rise to these states, which interfere with the functioning of the sense organs and of the general organic sensibility. Their occurrence is recognized in many instances by careful examination and the exclusion of evidence pointing to the existence of peripheral lesions. In connection with the clinical investigations of the anomalies of sense perception there are a few facts of great importance that should be kept in mind. The stimulus and the resulting sense perception under normal conditions bear to each other certain proportional relations. When this equilibration is seriously disturbed we have what is called an abnormal perception. The normal relationship between the stimulus and the resulting perception may be disturbed in several ways.

Further than this, as has already been pointed out, the

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[17] Bechterew: Ueber Störungen im Gebiete der Sinnesperception bei Geisteskranken. Monatsschr. f. Psych. u. Neurol., Bd. xiii, Heft 6, 1903, S. 500.

state of consciousness at the time of the incidence of the stimulus is an important factor in every sense perception. In sleep, in stuporous states, in dementia, the visible reaction only follows a stimulus whose intensity is far above the normal. In all conditions in which the voluntary attention is disturbed the same lack of correspondence between the intensity of the stimulus and the perception becomes apparent. The fact that a strong stimulus may produce no reaction if a patient's attention is diverted is a matter of common observation. On the other hand, in certain emotional states, such as excitement or fear, there is often a great diminution or, it may be, complete absence of any apparent reaction. This may be due, as we have seen, to peripheral disturbances, or it may be centrally conditioned and depend solely upon the deflection of the attention. Disturbances of sensation which are of especial interest to the alienist are those commonly described as hallucinations or illusions. As has been said, all sensory impressions when once stamped upon the neural elements as the direct result of peripheral stimulation may be re-collected.

Sensory memory, that process which occurs in the central nervous system as the direct result of a peripheral stimulation and which conditions the return of sensory phenomena, may exceptionally occur without peripheral stimulation, and then becomes the source of fantasms or hallucinations. Every one at times is subject to hallucinations or illusions. The corrigibility or incorrigibility of these phenomena is the test by which we judge as to whether they are or are not compatible with perfect sanity. The patient may suffer for years from auditory hallucinations. He recognizes, however, the fallacious character of the perception, and his conduct is not in any way determined by it. No one would suppose for an instant that an individual was insane simply because he was subject to hallucinations, but as soon as he becomes doubtful whether the false sense perception should not be permitted to influence his conduct he may be said to be on the borderline between sanity and insanity, and when he becomes convinced that the vision or the voice, as the case may be, possesses

categorical attributes, then, unquestionably, alienation in the legal or lay sense is present. The processes of sense perception, as has already been stated, may be both quantitatively as well as qualitatively disturbed. The alienist is only concerned with the consideration of those qualitative changes where the power to discriminate between what is true and what is false in perception is inhibited.

In 1832 Esquirol in his classical work[18] divided abnormal sense perception into two classes: (1) Illusions—sense perceptions that are objective, false interpretations of external objects; and (2) hallucinations, those that are purely subjective. In the former case there is an external stimulus, which in a measure is the exciting cause of the phenomenon, but the interpretation of the sensation as it appears in consciousness is a false one. Accompanying the peripheral stimulus there is an error in judgment associated with every illusion. Recently, Ziehen has suggested the following theory as a possible explanation for the occurrence of hallucinations. He supposes that the stimulus takes its origin in the cortical cells and is discharged in the opposite direction to the course taken by the normal stimulus. The psychical processes referred to by Kahlbaum as re-perception are explainable on the basis of this theory.

In hallucinations the subjective representation may be so exaggerated as to be indistinguishable from a true perception. The presentation, or act of associative memory, that is normally a constituent of every perception, is reduced to a minimum. It is questionable, however, whether this factor is ever entirely wanting, as it is almost impossible in examining patients with hallucinations to preclude the possibility of its existence. From a practical stand-point, however, the presentation or external stimulus in many cases may be said to be deficient. The flies crawling over the bedclothes of the patient suffering from delirium tremens are thought to be angels or devils, and we are therefore justified in regarding

[18] Sur les illusions des sens chez les aliénés.

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these sensory phenomena as mere illusions. The fantastic figures seen by the alcoholic at night or the voices heard by him when in a quiet room are commonly said to be hallucinations, but it is absolutely impossible to tell in each instance whether an external stimulus does or does not enter into this phenomenon. The sensory plainness of hallucinations is one of their most striking characteristics. Elementary hallucinations are the simplest form of these phenomena, viz., simple sounds, akoasmata, or flashes of light, photomata. Between these simple varieties and the extremes there are all degrees of difference.

Baillarger distinguished two kinds of hallucinations—psycho-sensorial and psychic. The first are the result of a combined action of the imagination and of the organs of sense. They are determined by an involuntary exercise of memory and imagination to which a sensory stimulus is added. Psychic hallucinations are said to be the result of the exercise of memory and imagination without the interposition of a sensory stimulus. The psychic hallucinations of sound are the most frequent. Patients describe them as "indistinct or spiritual voices," "the communications between mind and mind," "thoughts coming as inspiration," "voices without sound," etc. These phenomena are referred to by some as pseudo-hallucinations, by others as apperceptive hallucinations. To distinguish sharply between the psychic and psycho-sensorial hallucinations is impracticable. The possibility always exists of the inability of the observer to exclude the presence of a sensory stimulus. Lugaro[18] has directed attention to what he believes to be the distinctive characteristics of pseudo-hallucinations. These phenomena occur, as a rule, in chronic cases. The imagination plays an important part in their etiology. They lack the distinctive characteristics, vividness, and objectiveness of sensory phenomena. They are associated with

[18] Lugaro, E.: Sulle pseudo-allucinazioni (allucinazioni psichiche di Baillarger). Riv. d. Patologia nervosa e mentale, 1903, vol. viii, fasc. I and II.

disturbances of the psychic processes connected with hearing and seeing or with the muscular sense. A common characteristic is their coherence and the apparent antagonism to other facts of consciousness. Synchronous disturbances in the personality are frequently noted. As a rule, they may be easily distinguished from true hallucinations as well as from the so-called psycho-motor disturbances of perception.

Many attempts have been made to explain the pathogenesis of these so-called psychic hallucinations, but as yet none of the reasons given are entirely satisfactory. The same is also true for that peculiar condition in which patients believe that their thoughts become audible to those about them (Gedankenlautwerden). Individuals afflicted in this way often refuse to answer questions, declaring that their thoughts are already known to the physician. The symptom may develop in normal individuals, particularly during states of fatigue or after the ingestion of certain drugs (*e.g.*, caffein, alcohol, hyoscin). The defects in judgment and imagination common in mental disorders give rise on the part of the patient to false interpretations of these phenomena. Sometimes the incidence of either auditory or visual stimuli seems by suggestion to be an important exciting element in their production.

In many cases in addition to audible thinking there is an acoustic hyperæsthesia. The patients complain of a whistling or rumbling in their ears, or there may be definite auditory hallucinations. One or several voices are said to repeat the thoughts. When the individual has command of more than one language the thoughts are repeated in the same language in which they were first apprehended.[20] There are those who maintain that audible thinking is due entirely to disturbances in the acoustic areas, while others affirm that the phenomenon is caused by abnormal stimuli affecting the centres associated with the muscular movements concerned in

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[20] Probst, M.: Ueber das Gedankenlautwerden und über Halluzinationen ohne Wahnideen. Monatsschr. f. Psych. u. Neurol., Bd. xii, Ergänzungsheft, S. 401.

speech. Clinically there are two forms—one in which the content of the hallucination is strange, and the other in which it is more or less closely connected with the individual's train of thought. Between "audible thinking" and the so-called primary hallucinations there are various gradations; in some instances the two coexist. The ideational hallucinations, those taking the form of actual sounds, as well as the primary forms, are so closely associated that it is frequently difficult to differentiate them. In many cases audible thinking is associated with the occurrence of insane ideas or delusions. Exceptions to this rule are, however, not infrequent. There may or may not be disturbances of hearing.

The projection of the audible thoughts varies—sometimes they are close at hand; at other times they seem to be at a distance. At times speech diminishes, although occasionally it increases in intensity and vividness.

In cases in which the functional activity of any sense area has been completely destroyed by congenital structural defects, as in those born blind or deaf, hallucinations of the corresponding sense never occur. The reports to the contrary are not reliable. The case is different in acquired blindness or deafness. Uthoff [21] reports a case in which the patient was blind in both eyes and yet suffered from "very dazzling and troublesome flashes of light." In this individual the peripheral visual apparatus was absent, but there was undoubtedly some abnormal stimulus affecting the rest of the visual tract and giving rise to these annoying hallucinations.

Jastrow [22] has shown that if the sight is lost before the "critical age," from five to seven, the individual does not possess any power of visualizing and never even experiences dream visions. These interesting studies all tend to strengthen the belief that the power of a cortical centre to function depends upon the education it has received, and that if this education has been sufficient, the power of function may per-

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[21] Monatsschr. f. Psych. u. Neurol., Bd. v, S. 372.

[22] Jastrow: Fact and Fable in Psychology. Houghton, Mifflin & Co.

sist for a very considerable period even without sense stimulation. This view has been substantiated by the results of clinical observations. Probst[22] reports the case of an adult in whom both the visual centres were destroyed, and in spite of this the patient not only was able to conceive of forms and colors, to picture to himself the house in which he lived and his surroundings, as well as to describe accurately the appearance of his friends, but also suffered from visual hallucinations. The case is of great importance, showing that the visual centres themselves are not necessary for the production of visual memory.

Those who are congenitally deaf have no appreciation of sound and never are afflicted with auditory hallucinations. The cases reported in which deaf-mutes are said to have had auditory hallucinations can probably be explained, as some have suggested, by the heightened perception of the arterial pulsation. Under perfectly normal conditions hallucinations do not follow peripheral irritation alone. Bonhoeffer, in his very interesting study of the psychical disturbances in alcoholics, has given the chief reasons which militate against the acceptance of the peripheral theory as presented by Liepmann and others. The singing in the ears which is often so distressing to anæmic patients does not by any means depend solely upon the throbbing of the vessels. Every clinician is familiar with the subjective sensations of light, sound, and pain from which the neurasthenic often suffers, and these are doubtless dependent upon the hyperexcitability of the central nerve-centres, a condition which may result, as has frequently been suggested, but for which no proof has yet been presented, from an autointoxication. Similar anomalies of function are common in many diseases: nephritis, tuberculosis, epilepsy, as well as in poisoning due to alcohol, lead, mercury, etc. The so-called elementary hallucinations of light, simple flashes of light or color, may indicate lesions in the cortex, but also occur in various forms of alienation.

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[22] Probst: Monatsschr. f. Psych. u. Neurol., Bd. ix, H. 1, S. 5.

Elementary auditory hallucinations (akoasmata, acoustomata), simple sounds, may be the results of lesions localized within the temporal lobe, but the visual forms may be among the prominent symptoms of mental disease.

Anomalous taste sensations (paragensias) are not infrequent. Sometimes these sensations may be definitely characterized as sweet, sour, etc. The hypodermic injection of morphine has been known to be followed by a bitter taste which persisted for some time. The occurrence of similar disturbances has been noted in santonin poisoning. Diabetics at times are said to have a sweet taste in their mouths. Many other examples of this character might be given, but these phenomena are not to be regarded as hallucinations. Frankl-Hochwarth[24] has shown that these sensations are frequently indefinite, and are referred to as unpleasant, nauseating, etc. Fallacious sense perceptions of taste have been frequently observed in cases of facial paralysis, middle-ear catarrh, and in tabes, as well as in epilepsy, neurasthenia, and hysteria. The lesions of the olfactory centres in relation to the occurrence of hallucinations of smell have also been carefully studied.[25] Frigerio's case is of great interest in this connection, as there was an atrophy of the left pes hippocampi major.

Fallacious perceptions of smell may follow (*a*) toxic infections, (*b*) structural changes due to compression of the olfactory tract, tabetic and senile changes, or may be noted (*c*) in neuroses, epilepsy, hysteria, and neurasthenia.

Hallucinations may be either unilateral or bilateral and may occur as such in connection with any of the senses. Seguin[26] was the first observer to call attention to the subject of unilateral hallucinations. The auditory are more common than any other forms. This may be due to the asymmetrical development of the auditory centre. The unilateral visual hallucinations are nearly always associated with definite lesions in

[24] Die nervose Erkrank. des Geschmacks u. Geruchs, Wien, 1847.

[25] Jackson and Stewart, Brain, vol. xxii, page 534. Siebert, Monatsschr. f. Psych. u. Neurol., Bd. vi, S. 81.

[26] Journal of Nervous and Mental Disease, August, 1881.

either the peripheral or central part of the optic tract. The inference is not justifiable that unilateral lesions in a sensory tract always give rise to unilateral hallucinations. There have been a number of cases reported in which a unilateral lesion of the sensory tract was followed by a bilateral hallucination. Cases of antagonistic auditory hallucinations occur. In one instance recorded by Magnan the patient heard voices in one ear which gave rise to the idea of persecution, and, later, in the other ear, voices which became the basis of a pronounced megalomania. Uthoff [27] has reported cases of great interest which emphasize the causal relation that may exist in those who are subject to visual hallucinations between the structural changes and the functional disturbances. The evidence so far accumulated all tends to emphasize the necessity of making an effort to determine the existence of defects in the peripheral apparatus, and in cases of scotoma to see whether, as is so frequently the case, the hallucinations correspond to the restricted field of vision. Great care should also be taken in examining patients with visual hallucinations to determine, if possible, whether the visual field is hemianopic. One interesting case has been reported in which a patient who was hemianopic saw in the blind field only the halves of curious fantastic figures. Unilateral visual hallucinations are more commonly associated with peripheral disease of the eye than with lesions in the retro-bulbar part of the optic tract. Too great emphasis should not be attributed to the importance of peripheral ocular disease as the immediate cause of visual hallucinations. It has frequently been stated that the visual hallucinations of the alcoholic are to a great extent conditioned by the variations in the intraocular blood-pressure. The disappearance of hallucinations on closing the eyes, or their movement synchronous with that of the eye-balls, has been observed in cases of peripheral as well as central disturbance. The apparent movement of the animals' faces, figures, etc., so common in many

[27] Beiträge zu den Gesichtshallucinationen bei Erkrankungen des Sehorganes. Monatsschr. f. Psych. u. Neurol., Bd. v, S. 241.

psychical disorders, may be due to disturbances in the nuclear region of the ocular muscles. In one case that came under observation the patient had external strabismus of the right eye, and the visual hallucinations seemed to correspond with his field of vision. The patient saw a single group of angels when he closed one eye, but two distinct groups when both eyes were open. The visions, according to the patient's statement, were "projected upon the wall of the room," but they did not seem to grow smaller or larger, as is often the case, when the patient approached nearer to or went away from the wall. This may be due to the fact that in the case referred to there was a disturbance in the mechanism of accommodation. Although the apparent size of the hallucinatory forms varies with their projection distance, it is still a matter of doubt whether the patients accommodate as the distance of the figures changes.

Hallucinations of hearing are the most common form of sense deceptions among the insane. As a rule, the sensory vividness of auditory hallucinations is even greater than that of the visual. A patient often describes visual hallucinations as pictures or visions, and they seem in many cases to lack the stamp of reality which is so characteristic of the auditory hallucinations. One of the distinguishing features of auditory as well as of other forms of hallucinations is frequently the remarkable reflex power they exert on the whole psychic life of the patient. The auditory or visual hallucination, characterized by the most foolish or senseless content, may dominate the judgment of the patient, making him commit insane or dangerous acts. The vividness of the hallucinations does not alone influence conduct. The emotional state and mood of the patient are of prime importance and may even determine the character of the sensorial phenomena. Nor, on the other hand, is the power of the hallucination or illusion in determining conduct due simply to its persistence. Many patients who are chronically insane hear voices for weeks or months at a time without acting in accord with the suggestions or the commands that they believe are whispered or

spoken in their hearing. And yet in other instances within a few hours these same patients when dominated by the hallucinations may commit insane acts.

The contents of hallucinations vary greatly, but it not infrequently happens that the patient sees the same face, hears the same voice, smells the same odor, etc. These false perceptions, which remain the same for a considerable length of time, are called "stabile hallucinations."

Auditory hallucinations are not uncommonly found to be associated with disease of the ear, and may to this extent be peripherally conditioned. Redlich and Kaufman[28] examined a number of patients who suffered from auditory hallucinations and were able to demonstrate that in the great majority of cases there were lesions in either the middle or inner ear that acted as sources of chronic irritation to the auditory apparatus and gave rise to various elementary sounds. These, by the agency of a hypersensitive cortex, were readily transformed into more complex phenomena.[29] The effect of peripheral stimulation under certain conditions in the production of visual and auditory hallucinations becomes apparent in the cases reported by Jolly, where the latter were caused in an insane patient by the electric stimulation of the acoustic nerve, and by Liepmann, where slight pressure on the eyeballs in an alcoholic patient caused visual hallucinations. It is also interesting to note that removal of the peripheral exciting cause may be followed by a disappearance of the hallucinations.

Kahlbaum[30] was the first to describe the so-called reflex hallucinations. Hallucinations of this nature are due to the transference of a stimulus from the sensory tract upon which it first impinges to another where it awakens a response. In one case described by Kahlbaum, whenever the patient saw a stranger he heard distinctly the derisive name "Uncle August."

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[28] Ueber Ohrmissempfindungen bei Gehörshalluzinanten. Wiener klin. Wochenschr., 1897.

[29] Bechterew: Ueber halluzinatorisches Irresein bei Affectionen des Gehörorgans; Monatsschrift f. Psych. u. Neurol., Bd. xiv, H. 3, 1903.

[30] Die Sinnesdelirien. Allg. Ztschr. f. Psych., Bd. 25, S. 1–86.

Reflex hallucinations are not at all uncommon and are observed in a great variety of conditions. They may occur singly or be combined with disturbances of several sense areas. Combined disturbances of sight and smell are very common, especially where there is marked interference with the organic sensations. The combination of hallucinations of hearing, sight, and touch give rise to the ideas associated with the most serious falsifications of the patient's environment and personality.

The importance of fixation or the direction of the attention to certain sense areas as a means of increasing the tendency to the formation of hallucinations and illusions is a well-known fact. In certain cases if the patient's attention is directed to the points of a pair of compasses pressed against the skin paræsthesias and tactile illusions may develop. A case of a delirious patient has been reported in which, when the finger-tip was touched with a pair of compasses, the points distant six millimetres from each other, two sensations were experienced. But when the points were brought nearly together, the patient affirmed that he was touched at three or four points. The same is true with regard to the testing of vision. If the patient is made to read fine print, he becomes conscious of anomalies in vision. The paralexia may develop as the size of the print is changed. In delirium it is sometimes noted that if a patient be permitted to look at a picture so small that the whole can be taken in at a glance, the visual stimulus results in a stationary vision. But if, on the other hand, he is made to fix upon a card so large that in order to cover the whole field a movement of the eyeballs is necessary, fallacious sense perceptions, which appear to move, may develop.

IV. DISTURBANCES OF CONSCIOUSNESS.*

The attempts which are constantly being made to arrive at a single accurate definition of consciousness have at present

* Von Bechterew, W.: Bewusstsein und Hirnlokalisation. Leipzig, 1898. Lipps, Theodor: Das Selbstbewusstsein: Empfindung und Gefühl. Wiesbaden, 1901. Mace, C. S.: The Problem of Consciousness in its

no practical importance for the physician. From a clinical stand-point the general description of the phenomena concerned, given by Loeb, is not only sufficient, but furnishes us with a practical working hypothesis. Associative memory or consciousness may, according to this observer, for the present be assumed to be the mechanism by which a stimulus brings about not only the effects which its nature and the specific structure of the irritable organ call for, but also those of other stimuli which have previously acted upon the organism or which are acting upon it simultaneously with the stimulus in question. How far consciousness is to be considered a factor in all animal life is a question that does not concern the clinician, but no matter how conservative may be his view in regard to its universality, for man at least, he is ready to accept Minot's dictum that "consciousness stands in immediate causal relationship with physiological processes."

If we view consciousness, in a general way, as the result of a series of established relationships between the cortical functions, it becomes the physician's duty to seek to determine the factors that may derange or inhibit these processes.

The combination of the various mental elements or integers is determined by the needs of the organism. These needs vary during different periods of life, not only at the important epochs, but from day to day and even from hour to hour. The equilibration of the organism when it has been disturbed by reason of the occurrence of a new need is again restored as soon as this need is satisfied. For example, a sensation occurs which we call thirst; the need of water is felt. Upon the introduction of water into the system the sensation rapidly disappears. In a general way the duty of the alienist is similar to that imposed upon the student of the normal functions of the brain. Both seek to determine the character and complexity of the needs of the organism and to understand as

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Biological Aspect. Science, 1902, vol. xvi, No. 392. Oppenheimer, Z.: Bewusstsein-Gefühl. Eine psycho-physiologische Untersuchung. Wiesbaden, 1903.

far as possible the manner in which it attempts to satisfy them. When the combinations which are brought about, as the result of cerebral activity, between the various mental integers reach a certain volume and degree of intensity, they are collectively designated consciousness. This term, as well as many others in the psychological dictionary, is relative, and a separate definition must be found for each case. Roughly speaking, however, we may affirm that the various processes which we group together under this head bear a definite relationship to each other, so that, broadly speaking, the consciousness of one individual under normal conditions is comparable to that of another person.

Wernicke distinguishes between the mere content (Bewusstseinsinhalt) and the activity of consciousness (Bewusstseinsthätigkeit) and has further proposed a threefold division of groups of functions, forming three different spheres of consciousness: (1) those functions upon which the ideas of self or individuality depend—autopsychic consciousness; (2) those which give us our knowledge regarding our own bodies—somatopsychic consciousness; (3) the sensations through which is revealed to us the external world—the allopsyche.

This tripartite division may be of distinct value in facilitating clinical descriptions. Not infrequently we meet with forms of alienation in which the disturbances in consciousness are limited to the first group, so that we have an autopsychic alienation. Again, the disturbance may be largely in the group of organic sensations—the somatopsychic psychoses; or there may be anomalies of the sensations in the allopsychic field of consciousness—allopsychic alienation. In the majority of cases the symptoms are connected with more than one of the three spheres.

The various complexes associated under the head of autopsychic consciousness possess only a relative stability and vary in the same individual at different epochs of life and even within much shorter limits of time. In other words, the sum total of the sensations, memories, emotions, etc., upon which the idea of personal identity rests is never constant. In the

normal individual there is never a complete dissolution of all these factors at any one moment except during periods of unconsciousness or sleep. Owing to the absence of marked mutations it is frequently inferred that the autopsychic consciousness, or knowledge of self, is comparatively stable. To a certain limited extent, it may be said that self-consciousness is independent of the somatopsychic and allopsychic fields of consciousness. There are many forms of psychoses in which the first is primarily attacked. One of the best known examples is the dissolution of the personality that occurs during the course of dementia paralytica.

The impairment or partial inhibition of all these processes is referred to as a dulling or clouding of consciousness. These disorders are frequently of forensic importance. While the cerebral activities upon which these latter functions depend are completely inhibited, the action or actions of the individual are performed unconsciously. From a medico-legal standpoint the use of the term unconsciousness does not imply that no reaction follows an external stimulus. Persons who are subject to epilepsy may perform a series of complicated acts during an attack. As is well known, various crimes may be committed during the occurrence of these transitory disturbances. The same is true to a limited extent of an individual acting under the influence of certain drugs, such as alcohol or cocain.

The disturbances in consciousness which are associated with automatism (poromania, dromomania) are of great interest to the alienist and may be of medico-legal importance. Not infrequently during periods characterized by temporary disturbances in consciousness patients undertake long journeys. This form of attack has often been considered to be pathognomonic of epilepsy, but, according to Schultz and others,[32] similar automatic acts carried out during a period characterized by marked dulling of consciousness are met with in other

[32] Ueber Krankhaften Wandertrieb. Allg. Zeitsch. f. Psych., 1903, Bd. lx, H. 6.

forms of temporary mental aberration. Such actions may appear perfectly normal, and yet after the lapse of hours, days, or even weeks, when the patient has fully regained consciousness, the memory of events that have transpired is wanting. The reason why a patient in this condition should undertake a long journey is not at all clear. Somewhat similar conditions have been known to be associated with alcoholism, certain forms of degeneracy, and, according to v. Krafft-Ebing, even with neurasthenia. It is interesting to note that in many of the cases reported the patients remember that they felt badly just prior to starting on the journey. In some instances there is a pronounced apprehensiveness and occasionally a feeling of oppression in the precordial region. In others the sensation is more general and is also accompanied by suspicion, depression, and in some instances a tendency towards a general irritability. The amnesia in these cases, as would be expected, is nearly always marked.

Reference has already been made to the relative stability of the content of the normal field of body consciousness (coenesthesia) and to some of the more important changes which may give rise to various anomalies. Head and others have recently called attention to the important part that diseases of the internal viscera play in changing the normal content.[38] The lower we go in the animal scale the more important the visceral impulses seem to be in determining the actions of the individual. But, as Head has shown, *in the normal healthy individual these are kept in the background*, whereas during disease the organic sensations may become so prominent and insistent as to be important in determining action. These abnormal intrusions into the field of consciousness may be the starting-point of various moods and mental anomalies.

Changes in the organic sensibility may assume a great variety of forms and as yet have not received sufficiently close attention and study from physicians. Not infrequently in

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[38] Certain Mental Changes that accompany Visceral Diseases. Brain, 1901, p. 345

the early stages of alienation we meet with marked disturbances in the ordinary sensations resulting in an abnormal sense of fatigue. This is particularly marked in the neurasthenic and hysterical states or in the beginning periods of depression. The patients affirm that they cannot make the slightest effort without experiencing a feeling of utter weariness. In other cases, particularly the earlier stages of intoxication and in the incipient phase of manic excitement, the patient is able to carry through a great variety of undertakings without experiencing a sense of effort. An important symptom in the diagnosis of the early stages of mania is the apparent tirelessness of the patients, who never seem to weary although almost constantly in motion. Important changes in the organic sensibility are further noted in connection with the feeling of thirst or hunger. In many instances the satisfaction which follows the drinking of fluids or the taking of food seems to be absent, and the patient consumes large quantities of meat and drink apparently without experiencing any sense either of satisfaction or of discomfort.

Some of these points are well illustrated by the following extracts from the histories of cases, for which I am indebted to my friend, Dr. Cary B. Gamble, Jr.

Case I. Asthma, emphysema, impairment of attention and memory with fear. Female, aged 50. Woman of considerable intelligence and education. For thirty-five years has been subject to attacks of asthma, as a result of which there is a decided amount of emphysema. Three years ago at the time of the attacks the patient began to suffer from a considerable amount of referred pain located anteriorly in the upper portion of the chest and posteriorly under the left shoulder-blade. About the same time she began to complain of an indefinite apprehensiveness without any well-defined fear. This feeling usually precedes her asthmatic attacks. Associated with it there is considerable distraction in the power of attention and memory.

The following case shows a slightly greater change in the field of body consciousness.

Case II. Female, aged 30. Mitral stenosis with failing compensation. This patient also had an area of referred pain on the left side of her chest, which extended over the epigastrium to the hepatic region. At

times the pain increased greatly in severity, and was associated with some mental depression. At these periods she also became suspicious of those about her, affirmed that the nurses neglected her, and the doctors thought she was malingering. These moods were transitory, and the patient was able to appreciate their significance.

Case III is of interest, as the patient showed signs not only of depression, but of some exaltation. Woman, aged 35, who had suffered from an attack of rheumatism. On admission to the hospital she was found to be suffering from shortness of breath, cough, edema of the extremities, and cyanosis, with superficial pain and tenderness over the left breast and back. Marked evidences of mitral stenosis. She was subject to attacks of depression, followed by a marked sense of physical exaltation.

Case IV. The patient, who had signs of adherent pericardium, was subject to alternating periods of depression and exaltation and auditory hallucinations. For a year prior to admission to the hospital she had frequently been awakened at night by hearing the sound of a bell, which seemed to continue for about fifteen minutes. At first she thought that the noise was real, but finally concluded that, as there were no bells in the neighborhood, the sound was merely subjective in character. The hallucinations always became more pronounced after a severe cardiac attack. Hearing was unusually acute, and there was no evidence of thickening or retraction of the ear-drums.

V. DISTURBANCES IN THE FUNCTIONS OF ASSOCIATION. INTERFERENCE WITH THE EXPRESSION OF CONNECTED THOUGHT. ANOMALIES OF MEMORY. DISTURBANCE IN ORIENTATION.

All forms of thought involve an association or connection between the various constituent psychic elements or units. The evidence of this synthesis becomes more apparent in what is called connected thinking. Regarding the neural states or processes which determine these combinations practically nothing is known.

The doctrine of associationism, so frequently enunciated, explains neither the sequences nor the variations in the thought processes. The mere fact that certain combinations of speech suggest mere time or spatial contiguity of ideas cannot be regarded as an explanation of the phenomenon. The assertion is frequently made that contiguity in place or time as well as the factors of similarity and the law of cause and effect explain the phenomena of the flow of thought. But the mere observation and recording of what are believed to be prominent fea-

tures of associations cannot give any real insight into the neural conditions which are at the basis of the phenomena.

Clinical observations have shown that the character and complexity of the synthetic processes may be essentially changed during the course of an alienation. It may be said of the abnormal as of the normal processes that the needs of the organism determine the character of the association; but it is true only in a general sense in cases of alienation, as compared with normal states, that the complexity and character of the combinations are capable of modification. This modification is one of degree and not of kind. The power of association or combination is as truly a function of the organism as is memory or the faculty of reproducing a former impression. The expression of thoughts in speech or writing is determined by needs created by individual necessities, by education, and other factors. The recollection or remembrance of an impression once stamped upon the neural elements awakens a train of thought or action which may have been previously repeated countless times.

As a rule, it is only the marked deviations from these set forms which attract the attention of the alienist. A train of thought as well as of action in the normal individual is directed towards a certain definite end; in other words, it is purposeful. All subsidiary processes are, as a rule, repressed or inhibited. One of the fundamental characteristics of mental disturbances associated with conditions of exhaustion or fatigue is the undue modification of the minor processes. The psychic activity is no longer dirigible. The subsidiary processes are intensified, and, to use an every-day expression, the patient's mind wanders. Minor and lateral associations divert the train of thought or action. The combinations between the various mental elements chosen now become those that are the simplest and easiest for the patient to form, regardless of sense. For this reason, mere sound associations or those that have become common through constant repetition may predominate.

Similar disturbances in association are particularly marked

following too large doses of cocain or alcohol. They also occur in the early stages of paresis, in dementia præcox, and in certain organic brain diseases. In cases of maniacal excitement the disturbances in both speech and writing often present certain characteristic anomalies. In addition to the exaggeration of what in the normal individual are the subsidiary processes, the tendency to form sound associations is marked. The patient's train of thought is not guided, as it normally should be, by the end to be attained (Zielvorstellung). There is a marked tendency to give verbal expression to every idea, and his own volubility serves reflexly to divert the patient's attention. In maniacal patients the speech-compulsion exhibited may become a dominant symptom, and is frequently, though by no means always, increased in proportion to the degree of psychomotor irritability present.

Aschaffenburg[24] has affirmed as a result of his observations that during the period of excitement which is characteristic of the manic-depressive insanity there is a dissociation of ideas. The interval of time between the incidence of the auditory stimulus and the motor reaction is shortened, and this is one of the reasons why the only combinations that occur are likely to be those which are the easiest for the patient to form, irrespective of the content or logical sequence of the ideas.

There is also a predisposition on the part of patients in this condition to the formation of combinations in which a certain rhythm or cadence is present. Not infrequently this is seen in the proneness of certain of these individuals to make verses. In these cases there is also a marked tendency towards pure sound association and the bringing together of senseless syllables. From certain observations the inference has been drawn that the tendency to sound association is indicative of an increased psychomotor activity. Boelhoeffer, however, far

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[24] Experimentelle Studien über Associationen. III. Theil. Die Ideenflucht. Psychologische Arbeiten, her. v. Kraepelin, Bd. iv, H. 2, Leipzig, 1902, S. 255.

from finding this tendency marked in delirious cases with motor restlessness, noted that, on the contrary, the content of the delirium did not differ essentially from the association in normal individuals; that is to say, associations determined by the sensations preponderated. It has also been observed that in cases of mental depression with accompanying anxiety, but without motor agitation, there is a complete independence of the two phenomena. The attention of the patient is, as a rule, easily gained, but is almost as readily deflected.

It is unfortunate that the term "flight of ideas" so commonly used by alienists is capable of so many various interpretations. Kraepelin uses the expression to describe a symptom-complex which is met with in cases of manic-depressive insanity and in certain forms of asthenic psychoses. The absence from the speech of the patient of a definite directing motive is characteristic of the disturbance. The prominence of the subsidiary associations, which in normal conditions are kept in abeyance, is noticeable, as well as the fact that external impressions or stimuli serve to deflect the train of thought. In this sense the typical flight of ideas consists in a combination of symptoms which may be successfully analyzed. In the first place, we have to do with what has been termed an external flight of ideas in which extra-organic stimuli give the trend to the flight. Here the association is not determined by the actual content. In the so-called inner flight of ideas rhyming and association by assonance may be prominent features. In addition, ideas keep cropping up in consciousness and in a measure determine succeeding expressions. As a rule, the actual rapidity with which combinations are formed during the period of manic excitement is not increased. This, however, is not in accordance with the opinion of those who report a definite quickening of the association processes under such circumstances. Ziehen contends, on the contrary, that during the period when there is a rapid, steady flow of ideas there is a synchronous increase in the attention which he refers to as hyperpoiesia. Closer clinical analysis reveals the fact that there is in a large majority, if not in all, of the cases a

propensity towards an actual splitting up of the attention. As the manic excitement increases, the sound associations become more and more dominant. A parallelism exists in some instances between the flight of ideas and the psychomotor irritation, but this feature is not constant. A typical "flight of ideas" may, on the one hand, be associated with a general psychomotor inhibition, while instances are not infrequent where the motor restlessness may be present without the "flight of ideas."

Heilbronner[35] criticises Aschaffenburg's deductions, and affirms that the phenomena noted as the result of experiments have not been substantiated by clinical observations, and maintains that the rapidity of the combining processes is actually increased. Moreover, he affirms that the flight of ideas is independent of the speech compulsion. Wernicke attempts to establish an intimate causal relationship between these two symptoms and the intrapsychic hyperfunction; the latter is supposed to bring about an actual levelling (Nivellirung) of ideas. Ziehen affirms that the motor agitation and the flight of ideas are coördinated and determined merely by an abnormal rapidity in the combining processes, and, further, that there is an actual spread of the cortical irritation chiefly involving the motor regions.

Liepmann[36] expresses dissent from the views enunciated by Aschaffenburg to the effect that the disturbance of conceptual thought in cases of maniacal excitement is a secondary phenomenon. He also maintains that the increase in the rapidity of the associative process is apparent rather than real, and is essentially a pure motor phenomenon. Three facts, according to Liepmann, militate against the views of Aschaffenburg: (1) The patients not infrequently describe their

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[35] Heilbronner, Karl: Ueber epileptische Manie nebst Bemerkungen ueber die Ideenflucht. Monatsschr. f. Psych. u. Neurol., Bd. xiii, H. 3 und 4, 1903, S. 193.

[36] Neurolog. Centralbl., Mai 1, Nr. 9, 1903. "Ueber Ideenflucht." Sammlung zwangloser Abhandl. aus d. Gebiete d. Nerv. u. Geisteskrankheiten, Halle, 1904.

hallucinations in a manner which suggests a flight of ideas, but which, on close analysis, is found to be essentially different. This phenomenon may be unaccompanied by any motor excitement. (2) The sound associations fail in certain cases in which there is a definite flight of ideas. (3) In catatonic periods intense motor excitement sometimes occurs unaccompanied by any flight of ideas.

The observations may be summarized as follows: Normally a train of thought is characterized by an advance or progression of the ideas in a definite direction. In the phenomenon under discussion a deflection of both the normal sensory and associative processes occurs, so that a definite guiding principle determining the sequence of thought is absent. There is a deflection of attention as well as impairment of the understanding. In normal connected thought the chief object of the attention is focussed upon independently of the subsidiary and minor facts of consciousness. The less intense this focussing becomes, the greater is the inclination towards the dissolution of the train of thought. If the chance appearance of a representation in the focus of consciousness is determined merely by a transitory connection or by a sensory stimulus, the conditions are ripe for an excessive flight of ideas. Liepmann affirms that in cases in which the flight of ideas is well marked there is always a rapid change in the representations brought within the focus of the attention. This should not be considered to be identical with an actual increase in the rapidity of association. Although the flight of ideas is frequently associated with the symptoms of psychomotor irritability, it is, nevertheless, to be regarded as an intrapsychic disturbance.

The following extract from the history of a case of manic-depressive insanity serves to illustrate the "flight of ideas."

The patient was very restless and talked excitedly as follows (verbatim report in short-hand):

"George A. was there. James and William as if risen from the dead. Fort got sick. Where are you in waiting, William? Colonel X—— comes up and registers. Where am I? Jesus Christ! I will be in time now,

I know it. Dr. C—— was so good, but he did not know his business. I forgive him. Now, there is John. I would like to see Mr. Z——. I think I understand him. That looks like John. Mother is coming. I took the brass bead of the rosary, and I pressed it to my lips and kissed it. Now it comes to Captain Jinks; that's ——. Now, you bring me back again—that is mother there; now there's George; and where you get to George, he is one of the best friends I had in the world; he had an abscess in the ear, I believe. Mr. Z—— came to the house, and I like him. I got my wisdom teeth cut; now it is great. This was due to a run-down system, and if I must say it—Tom knows all about that. Now first comes ——. How many children have you got? I asked for my brother George, who you know had an abscess in the ear. Now, it is the first success of the Catholic Church. Now, there is Mr. N——, whom I stood for—collar buttons. And as soon as I got in there I saw George A——. Our Father who are in Heaven, hallowed be Thy name—and I never understood what I meant. That man coming round there was in Dr. C——'s house I believe. Wait a minute, yes, that is mother with ——, and she was A-n-n-i-e. Now, there is George A—— and Dr. C——; he was my friend. I took the prussic acid, and I took the brass bead, and when we came to George A—— it was tally, tally."

Replies to questions:

Q. Why can't you keep still?

A. Because I am nervous, because I must. Now I am coming around to Dr. ——.

Q. Mr. C——, can't you keep still?

A. I will try to keep still. Well, where is ——?

Q. Tell me, Mr. C——, why you can't keep still.

A. Because I had no business to behave the way I did.

Q. Can't you keep still, Mr. C——?

A. Well, I am trying.

Q. Can't you keep still without talking?

A. Yes.

Q. Let me see how long you can do so?

(Temporary silence for a few seconds; then the patient begins as follows:)

Where is George A——?

Examiner: Can't you keep quiet?

(Silence for a longer period.)

There is George A—— right there. —that is ——, certainly it is.

Q. Mr. ——, why do you talk so foolishly?

A. I want to see Dr. ——.

Q. Who am I? (Examiner refers to himself.)

A. I do not know; is that Dr. ——?

Q. Where are we?

A. Well, do the best you can.

Q. Mr. ——, where are we?

A. We are in the Antipodes.

Yes, what is the matter with the physician—what is the *trouble*?

Q. What is the trouble with you, Mr. C——?

A. I am in bed sick with a run-down system.

"Now we are coming back. We are risen from the dead with Jesus, the first success. A-s-u-r-e. Now we are getting around again. There is the shorthand writer. Now just go to dear old —— and say that this is the first success of Marconi in Jesus, and he knows of the woman, because I did take the brass bowl from mother; came to the house, and I think Dr. —— he came. George A—— is a great friend of mine; certainly he is."

The following is an example of a mild flight of ideas as expressed in writing. The patient was asked to give an account of his case to the doctor.

"My Dear Doctor: I want to give you an exact statement of my case since you left me, out of the Room yesterday morning and it will be brief. I took a long walk with my good young attendant, ate a big dinner, drank 4 glasses of milk and lots of water, the trouble I reported to you has entirely, or nearly so disappeared. I then slept for two and one half hours so my attendant informs me, from about 2.30 to 5 P. M. then I went out until supper time, ate a large supper, saw you later on in the evening, after taking another rest in bed for ½ hour. Read everything I could in a short time, walked up and down the long halls, talked to every one that cared to open conversation, by invitation played ochre with a man from the south with his hands done up in bandages and he beat me hands down at the game of his choice. Then I talked until almost bed time with him and that big fellow 220 lbs. who says he takes a glass of beer to make him sleep. How foolish. I told him how to go to sleep without any aid and he tells me this morning, although I suppose he took his beer, that he slept splendidly. I slept soundly from about 10 until sometime in the night when I requested the attendant to get me a glass of water and a cup of beef tea with lots of red pepper. *I awoke at 5 o'clock, my shirt is shamefully soiled and my collar size 15 is much the worse for wear, can I have a clean shirt and collar this morning?*

"You will see from the above that I have slept from 9 P. M. yesterday to 6 A. M. 1041 16 hours 2.30 ten and a half hours

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6

10.30

any more would be very apt to give me a dull headache such as my brother sister-in-laws and mother constantly complain of

"I am no doubt very very mad as they all think excepting only B—— and C—— who are both reasonable beings it is no fault of theirs:— they were born that way and can't help it—so were you and I—'Gut helf uns wir vor nicht en dern' as Martin Luther said when driven by others to make the present remark. I have certainly written you enough to con-

vince you of my *sanity* but they still believe me 'Mad' you don't now help me to carry on the joke and assist me to show them '*some day*' in the far distant future that I was made but with one method without madness.

"Please send me any old clean shirt and collar before breakfast size 15. Telephone my brother not to come to see me yet as he irritates me. To go home and look after his own family and mind his own business. Send me the watch he promised me, all the—papers daily all important and social mail and see that X—— buys all the Farm and the tract with the elm trees on it and do all such other things that will please me and report progress. Then send immediately by telephone or let me do it for the only people that fought with me send W—— and the deceivers arrived.

(3) and please send for them immediately and tell them all to come together and give me all the things that will minister to my comfort and happiness.

"Thanking you always for your kindness and that you have not (2) given me any delays I am

"Very sincerely,

"A. B.

"Mad man behind the bars of good fortune.

"Have my mail addressed not to the lock post-office and not to (1) the institution for my bankers credit sake.

"To get the important features of this letter read only this many the letter '*backwards*' as all good books should in my estimation be read. Paragraphs (1) (2) (3) (4) and then let me take a long walk with my attendant early this morning and give me a parole later on."

ANOMALIES OF MEMORY.[a]

The power of the organism to retain and redevelop impressions is probably to be regarded as a specific function. That so-called memories are localized in individual cells is an hypothesis which must be abandoned, and although the problem is one which lies within the realm of brain physiology, it must be confessed that little is known regarding the dynamics of the processes concerned in the reproduction and re-collection of past stimuli. At present it is sufficient for the clinician to recognize that the function or functions grouped together

[a] Hering, E.: On Memory and the Specific Energies of the Nervous System. 2d edition, Chicago, 1897. Loeb, J.: Comparative Physiology of the Brain and Comparative Psychology. New York and London, 1900. Baldwin, J. M.: Dictionary of Philosophy and Psychology (Chapter on Memory). New York and London, 1902.

under the head of memory are specific characteristics of the organism.

For convenience sake the various functions of memory have been arbitrarily divided into three categories—those of reproduction, recognition, and localization. But the utilization of this division is not in any way meant to convey the idea that these functions are separate and distinct, as it is well-nigh impossible to conceive of one series of phenomena taking place without the reciprocal action of a second or third. From the clinical stand-point there is no reason why defects in these various functions may not be considered as either general or special in character. As an example of the first group may be cited the general impairment in all forms of associative memory without the existence of pronounced defects in certain directions. This phenomenon is commonly observed in a great variety of psychoses in which there is a pronounced general mental enfeeblement. In the special or more or less isolated defects the power of reproducing certain images or impressions is lost while others are retained. From the clinical stand-point and to facilitate description we may also speak of a general *amnesia*—a term used to indicate the general lack of retentiveness—or a *paramnesia*, in which disturbance in the mechanism of associative memory causes a distortion and false association of the retained facts. And finally, according to some authors, there is a *hypermnesia*, in which there is an apparent increase in intensity and brilliancy of certain mental reproductions or re-collections.

All these various psychical processes, which we collectively designate as memory, may become seriously disorganized during an attack of alienation. On account of the great complexity and interaction of the processes, it is necessary that they should be considered in their relationship to other psychical phenomena. There are, however, certain characteristics associated with these processes which are of particular interest to the clinician. In the first place, there is the recording faculty, or power of retaining a new impression (Wernicke's Merkfähigkeit). Next in importance comes the capacity to

reproduce this impression, and this is directly dependent not upon one but upon a number of functions. And finally there is the tendency shown by the brain to re-collect and reproduce impressions after varying intervals of time. As has already been pointed out, these functions are dependent upon each other and are intimately related to other processes. In the various disturbances which are common in the insane they do not suffer equally. The facts bearing upon the genesis of these functions have a clinical value. If we consider the development of the memory in the child, it is apparent, as Spiller has affirmed,[88] that this is determined by the needs of the individual. In the infant at birth many of the muscular movements are incoördinated and performed with difficulty. Constant repetition develops the power to reproduce movements with increased ease and celerity. This exercise or muscular memory develops rapidly in response to various intra- and extra-organic stimuli. The return to the primitive state of the child, where the simplest movements are reproduced with difficulty, is not infrequently seen in certain forms of alienation, particularly in the catatonic states and in the dementias. Next in order comes the retention memory or the feeling of recognition. By some clinicians this form of memory or sense of recognition is held to be a definite and distinct factor. Vogt has affirmed that with every perception there is associated an impression of recognition, and not only are the clearness and plainness of the memory picture essential factors, but coupled with them is a definite and distinct quality called the recognition faculty (Bekanntheitsgefühl). Pick affirms that this factor is important in analyzing the symptoms in various forms of alienation. He contends that the feeling of strangeness and the inability of individuals in certain states to recognize either their surroundings or familiar faces are directly referable to abnormalities of the recognition faculty. Rosenbach[89] reported the case of a man who had never suffered

[88] Op. cit.

[89] Ellenmeyer's Centralblatt, 1886, Nr. 7.

from symptoms of alienation until one day after very severe exertion, when he failed utterly to recognize the street in which he had lived for years and greeted perfect strangers as intimate friends. It was possible, however, to convince the patient of his error. In hysterical and epileptic attacks patients not infrequently complain of a feeling of strangeness and affirm that everything is far away. Although they recognize that they are in familiar surroundings and in the presence of friends, they are temporarily devoid of the normal feeling of recognition. Bonhoeffer[46] has described similar sensations as occurring in epileptics. As the disturbances are apt to be transitory in character, it is impossible to make a complete examination of the psychical symptoms.

Somewhat different from the mere recognition of objects or persons is the power to re-develop the psychic processes associated with a given stimulus or stimuli after they have ceased to act. By this form of memory we mean that an individual is able to retain ideas or recognize objects, persons, etc., provided that a sufficient number of repetitions of the original stimuli have taken place. The face which seems strange to us becomes familiar after being repeatedly observed. But this faculty frequently suffers in various forms of alienation. It is important to analyze all cases in which these disturbances occur so as to determine, if possible, the underlying conditions. In some instances the detention or retaining power for new impressions is impaired. This may be tested by telling the patient to remember three words and at the end of half a minute asking him to repeat them, care being taken that the cortex is not unduly stimulated by allowing the patient to say the words aloud. In many forms of dementia the detention-memory for even such simple tests as this is greatly lowered. The power to retain impressions may be disturbed by the constant inflow of sensory stimuli, as in the case of delirious

[46] Bonhoeffer, K.: Ein Beitrag zur Kenntniss der epileptischen Bewusstseinsstörungen mit erhaltener Erinnerung. Centralbl. f. Nervenheilk., 1900, S. 929.

patients in whom a stimulus is not given sufficient time to act. The new impression is obliterated as soon as the stimulus which has given rise to it has ceased. The power to receive new impressions is seriously interfered with by various drugs, such as the bromides, morphin, etc.

The paramnesia, or tendency frequently shown by patients to distort memory, is often exemplified in the clinic. In hysteria it is no rare thing for individuals to give the most remarkable accounts of themselves and of their doings when their narrative is not based upon any semblance of truth. These cases, as a rule, are characterized by a marked increase in the imaginative faculty. Although the suggestion has been made that such a tendency to confabulate depends primarily upon isolated defects in associative memory of which the patient is only in part conscious, in Korsakow's syndrome, as is well known, individuals show a marked tendency to freely indulge in pseudo-reminiscences. As a rule, however, these cases are more easily recognized than are the hysterical liars on account of the presence of more or less impairment in all the mental faculties. The tendency to lie and the relation that this bears to defective memory is a theme of forensic bearing. Unfortunately, in many cases, on account of the present limitations in our knowledge, it is impossible to get at the facts in the case. The hypermnesias are frequently exemplified not only by patients in the clinic, but are met with in individuals in every-day life. Under this head we may group together those cases of phenomenal memory in certain directions, frequently exhibited in the development of certain talents, such as the power to calculate rapidly, to learn by rote, or in the extraordinary feats of memory exhibited by chess players, musicians, etc. These hypermnesias as well as the paramnesias are frequently associated with marked disturbances in the organic sensations. It is only necessary in this connection to refer to the paramnestic and hypermnestic defects which frequently become marked in the course of various psychoses, such as manic-depressive insanity and dementia paralytica.

DISTURBANCES IN ORIENTATION.*

By orientation is meant the power of an individual to recognize and appreciate his environment and all that pertains to it. This faculty is a complex one and conditioned by a great variety of factors, chief among which is the power of re-collecting and redeveloping past impressions. Disorientation is a symptom that is frequently observed in cases of alienation and by some clinicians is considered a fundamental anomaly in nearly all forms. In attempting to analyze the disturbances of orientation it should not be forgotten that the most elementary forms of this process are those directly associated with the physiology of the sensory organs; as we rise in the animal scale, it is found that the primary sensory impressions become more elaborate and consequently more complex and more difficult to analyze. Clinical experience has abundantly shown that focal lesions not infrequently give rise to disturbances in orientation. This is in part due not only to the interference with the transmission of afferent and efferent impulses, but also to the more general disturbances dependent upon anomalies in the attention and in associative memory. In cases in which focal lesions have occurred the great importance of the sensory tracts for the preservation of orientation at once becomes apparent. But the disturbances which are of particular interest to the alienist are, as a rule, those in which such focal lesions are not in evidence, although injuries to the subcortical ganglia may give rise to a severe form of disorientation. In the polyneuritic psychoses we frequently have an excellent example afforded of the extreme degrees of disorientation and indications of the important part probably played by the peripheral tracts in the maintenance of normal relationships between the individual and his environment. In such instances not only the spatial but also the time orientation suffers. These anomalies are, as a rule, not isolated, but in many instances are complicated by considerable general impairment of all the cortical functions.

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* Hartmann, Fritz: Die Orientierung. Leipzig, 1902.

That the preservation of the normal functions of the cortex is essential to a perfect orientation is well demonstrated in the early cases of general paresis. Paretics not infrequently seem utterly unable to interpret their spatial or time relationships correctly. A similar condition exists in many cases of catatonia, and more than one observer has attempted to show that the disorders of motility undoubtedly play an important part in the clinical picture of this disease. It is not at all improbable, as Meynert, Hartmann, and others have pointed out, that the catatonic symptom-complex, which may be characterized by practically no disturbances in sensibility and by little interference with the dynamic power of the muscle, is in large part the result of anomalies in the so-called muscle sense, and that this latter disturbance is referable to interference with the normal balance of the cortical functions. Sometimes in various delirious states it is obvious that the patient is the subject of a profound degree of disorientation. This may, in part, be due to the influx of fallacious sense perceptions, which create, as it were, a temporary imaginary world in which the individual lives and to which he tries to adjust himself. Disturbances of this character are not uncommon in delirium tremens, amentia, and a number of other conditions. Another form of the disorder is noted in states of depression, to a certain extent because incoming stimuli fail to be elaborated and only serve to direct more forcibly the patient's attention to his own symptoms. Sometimes in the manic stupor individuals seem to completely fail to appreciate their surroundings and have a deficient time sense. In all forms of apathy there is a considerable degree of disorientation which is also to be attributed to the disturbances in associative memory and the inability of the individual to recollect past impressions and to compare them with sufficient accuracy with other experiences.

VI. DISTURBANCES IN THE VOLITIONAL PROCESSES.

Among the more complicated of the psychic processes are those which are commonly grouped under the head of voli-

tion. This series of phenomena belongs to the more highly organized functions of the brain. Anomalies of volition in the insane are not essentially different from those found in the individual who is not the subject of mental aberration, although the popular belief among the laity commonly assumes that the disturbances of will which occur during the course of alienation are the result of certain conditions and modifications which do not enter into the general discussion of the so-called problem of the will. Science affirms that all our acts are the correlates of the associated brain processes and that the phenomena of volition are primarily conditioned by sensation and by variously elaborated and complex memory-pictures, and not by the interposition of some new form of psychical activity. The will as a specific function does not exist. The acts of the individual, whether sane or insane, are only the consequences of physical conditions which, if they were fully understood, would render it possible to foretell the character of the act. In other words, the power of volition possessed by any given individual is in direct proportion to the functional capacity of his brain, and to assume that he is endowed with some psychic power superior to the potential efficiency of the central nervous system is an hypothesis that has no justification in facts.

The neural elements in the cerebral cortex are not only responsible for the reception, retention, and modification of sensory stimuli, but also have to do with the initiation and conditioning of the efferent impulses. These impulses determine the acts or the conduct of the individual, and between incident motion or the stimulus, on the one hand, and the motor response, on the other, is interposed a series of phenomena which depend upon the structure and functional capacity of the central nervous system. The brain determines the kind of response and gives to a series of muscular movements a definite stamp and character. Thus, for example, we recognize an individual by his walk or by the character of his facial expression; in other words, we have in a general way a definite picture of the manner in which muscles under certain condi-

tions respond to certain given stimuli, and these motor reactions, as has already been said, are determined by the central nervous system.

In order to obviate the difficulty of describing the volitional processes in terms that, unfortunately, have a metaphysical meaning, and thus set up new stumbling-blocks that serve to thwart the efforts of the investigator in his attempted solution of these and similar problems, some physiologists (Bethe, Beer, and Uexhill) have proposed that only such terms shall be employed as shall serve to indicate the immediate dependence of the volitional no less than the reflex movement upon the functional capacity of the central nervous system. With this end in view Bethe has suggested that all forms of nervous response should be designated as *autkineses*, while those recurring regularly and in a definite manner in response to stimulation shall be called *reflexes*, whereas all the volitional responses in which there is a variable factor due to the greater complexity and elaboration in the physiological mechanism shall be classed together as *autkinises*.[42] The acts of an individual under normal conditions vary within comparatively narrow limits; the limitations are imposed by the functional capacity of the higher brain-centres. Coördination and continuity of movement as well as of thought depend upon the integrity of the neural elements in the higher brain-centres.

There is a remarkable degree of uniformity in the mechanism of all forms of movement. The general laws which hold good for the simplest are applicable with certain modifications to those of greater complexity. Reflex movements may be defined as those following immediately upon the incidence of a stimulus without the interposition of any cerebral process of which we are conscious. This form of movement may be intensified or inhibited as the direct result of sensory stimulation. The same is true of movements in which there at one time has been an element of consciousness but which, through

[42] Bethe, A.: Allgemeine Anatomie und Physiologie des Nervensystems. Leipzig, 1903.

constant repetition, have become reflex or automatic. In the normal individual the eyelids are quickly closed in response to visual stimuli, and protection is thus given to the eyeballs from injury from without. If, however, the cerebral processes are inhibited by disease so that the reflex closure of the lids is impossible, no response follows the stimulus. Volitional movements differ from reflex and automatic acts in the fact that prior to the discharge of the efferent impulse an idea of the movement to be executed appears in consciousness, and, as will be seen later, it is upon this phenomenon that the idea of freedom in choice in all volitional acts depends.

Expressed in physiological terms, a volitional process may be said to consist in the reception of the stimulus, its retention and elaboration, brought about by the activity of the higher brain-centres, and finally the motor discharge. The complexity of the processes concerned in the act depends primarily upon the response of the neural elements to the primary stimulation. As has frequently been pointed out, the volitional processes, from a scientific stand-point, may be considered to represent the totality of those conditions of which we are in part conscious and that are directly related to a series of movements and to whatever is contingent upon their execution (Mach). The conditions to which an individual is subjected may produce disturbances of sensation or of memory, and may also give rise to anomalies of volition. This is equivalent to saying that just as there may be delay or resistance in the reception, storing, and elaboration of stimuli, so there may be opposition in the course of their emission. (See *tics, stereotyped movements, negativism.*) The psychomotor retardation in cases of depression and the psychomotor excitability in maniacal patients afford respectively good examples of the difficulty and of the ease with which volitional acts may be executed. In the former case all forms of movement are difficult, so that not only is there a delay in the reception and actual association of the afferent, but the discharge of the efferent impulse is impeded. In states of mania, however, the opposite conditions prevail, and the execution of many voli-

tional acts is carried out with greater ease and rapidity than is normally the case.

Those who are familiar even with the elementary facts of physiology realize that sensations and memory-pictures are indissolubly connected; there is no sharp line dividing them. Disturbances in the functions we call memory may produce anomalies in sensation, and vice versa. There is an intimate dependence of the one series of phenomena upon the other and, therefore, impairment of one set of functions reacts upon the others. What is true in regard to sensation and memory is equally true in regard to the greater complexity of functions we call the will. Loss of vision impairs the volitional power associated with certain movements; for example, the blind man stands irresolute owing to the impairment of those acquired reactions which, in a measure, are conditioned by vision. The impairment of volition may be the result of diminished function of the sense organs or, as in various psychoses, is caused by the limitation and inhibition of the cortical functions. The individual differences in the effect of a given stimulus is a matter of everyday experience. One person may look over the edge of a precipice without feeling a strong and almost irresistible force, the consequence of certain organic sensations, impelling him to throw himself headlong into the abyss below, while another experiences this impulse. The differences in the individual reactions and the degree of impairment of volition following the use of alcohol, tobacco, cocain, and other drugs are well known. Under certain conditions stimuli awaken in one individual a chain of impulses and desires that in another person are either entirely absent or so feeble as not to require any special set of will to overcome them. In the functions of the nervous system are to be found the mainspring of those desires that serve to attract or repel us from certain objects, and that render one situation or event pleasant and another painful. As the new needs spring into being, the organism reacts in a manner determined by established trends and inclinations that are partly the result of congenital and partly of the acquired functions of the central nervous system.

We inherit a brain endowed with certain capacities that may be increased by education and the stimulating effects of our environment. The difference in the volitional acts of two individuals is primarily determined by the disparity in the functions of their nervous systems. One individual is bright, responsive, and emotional; the other is dull and phlegmatic. In the former the reception and elaboration of incident stimuli are followed by a prompt and quick discharge of efferent impulses, while in the latter the opposite condition prevails.

The alienist is interested in disturbances of volition from two stand-points. In the first place, he considers these abnormal phenomena from a clinical point of view, and, in the second, they have an important forensic bearing. The acts of an individual who is the subject of alienation may deviate from the normal as a result of a number of conditions. For this reason it is impossible to judge of the disturbances in the volitional processes without a careful study of the individual case. When there is a considerable impairment of all the intellectual processes, as a result of this functional defect, the individual may show marked impairment in his voluntary acts. Such is the case in idiocy, imbecility, and various forms of dementia. On the other hand, the presence of hallucinations or illusions may condition the conduct. The crucial point in passing judgment regarding the acts of a patient rests upon the decision as to whether the individual who was the subject of hallucinations or illusions recognized these phenomena as abnormal, and whether they were in any sense a factor of importance in conditioning his act. The conduct of an individual is not infrequently determined by the existence of an emotional state, and emotional excitement is primarily due to functional changes in the central nervous system. Among the cases where the disturbances of volition are of great moment are those in which impulses dominate the acts of the patient. These impulses are of great variety and of varying degrees of intensity. (See Obsessions.) In all disturbances of consciousness, so common in various psychoses, there is necessarily some impairment of the volition. In various forms of

alienation the clinician is struck by the fact that in some cases the voluntary acts of an individual seem to be confronted with a certain amount of opposition; while in other cases the resistance interposed between the psychical event, on the one hand, and the physical reaction, upon the other, is below the normal, and the patient seems to act with greater promptitude than under ordinary conditions. As an instance of the former class may be cited the psychomotor retardation noticeable in the periods of mental depression, and of the latter the increased excitability so common in states of mania as well as in the early stages of alcoholism. In conditions of fatigue there is also a marked diminution in the intensity and duration of the so-called voluntary acts. The same is true in the various forms of dementia.

The ghost of metaphysical speculation continuously confronts the alienist when he attempts to deal with volitional processes in which there is an apparent choice between one or more motives. The doctrine of the so-called freedom of the will is one that has long been jealously guarded from assault by the theologian and metaphysician. There are certain obvious factors in connection with this discussion that clearly show the problem to be one whose attempted solution lies within the province of the alienist. It is a matter of common clinical experience that the sense of freedom associated with volitional acts in the normal individual may be present with even greater force in the consciousness of the patient who is the subject of alienation. The consciousness of freedom accompanying all volitional acts is the result of certain cortical functions. As has been indicated, the intensity of this sense of freedom varies not only in different individuals, but at different times in the same person. The feeling may be greatly diminished in states of mental depression as well as in fatigue or after the administration of morphin and the bromides. This condition is in marked contrast with the extravagant sense of freedom common in cases of paresis or alcoholism and so frequently described in language that by its exaggerated character indicates the remarkable changes in

the organic sensations upon which the feeling is based. The consciousness of freedom that accompanies nearly all volitional acts is a composite of sensations, emotional reactions, and ideas. The prominence of the ideational element, dependent as it is on the occurrence of certain organic sensations, is greater in those instances where, subsequent to the performance of an act, there is the feeling that another motive or line of action than the one chosen might have been selected. The consciousness of freedom is referable not only to the act, but also to the accompanying desire or wish. As has already been pointed out, somatic disturbances that affect the personality or somato-psychic field of consciousness are characterized by disorders of the volitional processes. The ego, or idea of personality, represents an indefinite and variable group of organic sensations. We are not the same to-day that we were a year ago. When weakened by disease, exhausted by fatigue or hunger, the limitations in our psychic personality and volitional processes are to some extent proportional to each other. It is important to bear in mind the fact that the sense of freedom supposed to accompany a decision as to the choice of motive does not occur at the instant the choice is made, but is, in fact, a subsequent development. As Hoche[42] has affirmed, we are unable to observe and record exactly all the processes that occur at the moment a choice is made. The attempt to do this necessitates a recollection and redevelopment on our part of all that has actually happened. The sense of freedom is in reality an after-thought. The duty of the alienist is to determine in individual cases the different conditions that influence the thought and conduct of individuals.

Frequently it is impossible to ascertain and analyze the facts, but we only increase and do not diminish our ignorance by substituting for the supposed conditions an unvarying and indescribable psychic force by and through which mountains are supposed to be moved.

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[42] Die Freiheit des Willens vom Standpunkte der Psychopathologie. Wiesbaden, 1902.

Tics not infrequently occur during the course of the psychoses and seriously interfere with the prompt execution of simple volitional movements. In certain disorders, more particularly in dementia præcox, imbecility, and idiocy, both tonic or clonic convulsive movements are common. These motor disturbances may be secondary and connected with the appearance of hallucinations, delusions, insane ideas, or imperative conceptions. The disturbance is of psychomotor origin; that is, there are two elements which are of etiological importance—the mental and the motor. The relative importance of these two factors varies in different cases. The impairment of the volitional power is dependent upon the insufficiency and irregularity of the cortical functions. These phenomena seem to indicate the incomplete development of certain psychic functions, and the anomalies of volition which accompany various forms of tic are the result of a mental disequilibration. In some cases the movements primarily represent responses to external stimuli; later, the stimuli having ceased to act, the originally peripherally incited movement becomes automatic. In other cases the movements may be the result of an insane idea.

Various forms of tic are met with associated with alienation. These sudden, incoördinated, and involuntary movements may be accompanied by considerable psychical disturbances, as in Huntington's chorea. According to Charcot,[44] "tic is a disease which is not material except in its appearance;" in other words, the affection is in reality "a psychical disease, a direct product of vesania." Brissaud has also called attention to the abnormal mental state in patients afflicted with tic. Meige and Feindel[45] have also emphasized the importance of the manifestations of motor storms with the associated mental aberration. It is impossible at present to refer in detail to the various manifestations of tic; the mental disturbances associated with them are described elsewhere.

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[44] Leçons du Mardi, 1887–88, p. 124.

[45] Les Tics et leur Traitement. Paris, 1902, p. 136.

Stereotyped Movements.—Contrasted with these eccentricities of movements is another class of motor disturbances—stereotyped movements—which play an important part in the symptomatology of a large group of cases. The phenomena belonging to these are of various kinds and may be collectively classified as stereotypies of movement or of attitude. The former are sometimes spoken of as primary, the latter as secondary.[46] Not infrequently the former are limited to the facial muscles. The patient screws up one corner of the mouth, closes one or both eyes, pockers up his lips to form the curious "snouting cramp" so frequently observed. At times these disturbances are limited to speech. There may be a stereotyped tone of voice or character of the inflexion. Inarticulate sounds, words, or phrases are repeated (stereotyped embolophrasia). Coprolalia may occur, but is more frequently associated with some form of tic. *Automatism* is frequently noted. The patient is told to protrude his tongue, and the alternate protrusion and retraction is continued until he is told to stop. When a reason for this continuation is asked for, a senseless answer is given or the patient becomes evidently embarrassed in attempting to find an explanation.

Stereotyped movements not infrequently resemble tics. In character the muscular contractions do not differ essentially from those of normal actions, but as the result of habit have become involuntary. Stereotypies are never convulsive. In clonic tic the rapidity of the muscular contraction is exaggerated, while in the tonic cases the duration is prolonged. The basis of many stereotyped movements is to be found in the acts of every-day life. The individual is characterized by his attitude, by his manner of walking, by the personality exhibited in his gestures, etc. These may become accentuated during an attack of alienation. Cahen[47] pointed out that the stereotypies of attitude or movement are coördinated and are

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[46] Ziehen: Psychiatrie, 2te Auflage, 1902.

[47] Contribution à l'étude des stéréotypies. Arch. de Neurol., Déc. 1900, p. 474.

not in any sense involuntary, but have the appearance of being carried out for a purpose, at first conscious and voluntary, but becoming through constant repetition automatic.

The incidence of stereotyped movements in insane patients is in most instances in all probability primarily due to an insane idea. Later the idea disappears, but the movements persist. It is sometimes difficult to distinguish between the purely impulsive acts of the person who is the subject of a tic and those stereotyped movements which not infrequently are characterized by a brusque explosiveness suggesting the former rather than the latter type of movements. The stereotypies of attitude may be designated as akinetic, while those of movement are parakinetic disturbances. The latter are very numerous, affecting various movements, the muscles concerned in speech, gesture, mimicry, and not infrequently the writing. The psychic correlate is shown in the expression of ideas.

The frequency with which these stereotypies are associated with insane ideas referring to movements of defence suggested to Bressler that this symptom-complex was a neurosis of self-protection due to an exaggerated excitability of the psychomotor centres. He proposed the name "mimic-cramp neurosis," basing his theory on the observations of Brenner and Freud in cases of hysteria where the movements were thought to be largely imitative.

Negativism.—Another condition not at all infrequent in certain forms of alienation, particularly in catatonia, is the so-called negativism. This may occasionally be mistaken for psychomotor retardation, and is associated with considerable impairment of the volitional processes. When negativism is well marked there is resistance to all passive movements. Frequently the patient does not wait to be touched, but turns away his head, closes his eyes, runs into a far corner of the room, crawls under the bed, any stimulus immediately arousing marked antagonism. At times associated with this is the characteristic catatonic rigidity of the muscles, but the two conditions are not often found to exist synchronously. The negativism may be extreme or only transitory and of a mild degree

of intensity. The refusal to eat may be a marked feature in such cases, and the urine and faeces may not be voided for long periods of time. The attitude of the patient is silly and apparently purposeless. In an aggressive or irritable patient an hallucination or delusion will generally be found to be the guiding motive of his conduct. Gross[48] explains one form of negativism as in part the result of psychomotor or intrapsychic inhibition. A psychohypaesthesia limits or inhibits the patient in his response to various stimuli, and he becomes conscious of the fact that he is not in harmony with his environment. Such a state is observable in the confusion which occurs in senile psychoses where the symptoms are directly dependent upon the limitation in sense perception. In another group of cases the patient is ill at ease, dislikes interference, gives evidence of his emotional state in his facial expression, takes little interest in his surroundings. The more marked catatonic symptoms are, as a rule, absent, but the patient is suspicious of those about him. When questioned or approached he shows plainly his disinclination to be interfered with, complains of being disturbed, or may even become aggressive and energetically active. In this group of cases there is evidently an insane idea as well as the consciousness of the inability to respond promptly to external stimuli. This latter physical defect is the basis of an emotional depression. The patient realizes that he is unable to receive and elaborate stimuli which come to him. The persistence of these disturbing factors may give rise to marked anxiety which may exaggerate the psychic defect.

The immediate cause of these phenomena cannot be referred solely to the lowering of the volitional impulses. Kraepelin and Sommer believe that the various catatonic disturbances, such as negativism, echolalia, echopraxia, stereotypy, mannerisms, and impulses all have a common foundation. Two factors are intimately associated with their occurrence.

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[48] Die Affektlage der Alkoholiker. Monatsschr. f. Psych. u. Neurol., Bd. xii, Oct., 1902, H. 4, S. 250.

There is either a stereotypy shown by the increased tendency of some movement or series of movements to recur after the incidence of the initial stimulus, or the element of suggestibility is nearly always present. Vogt,[13] however, does not believe that it is possible to explain the symptoms in detail upon such a foundation. Basing his opinion upon the work of Müller and Pilzecker,[14] as well as upon that of James, he is inclined to believe that a representation appears in the field of consciousness prior to every act or movement, and remains there until displaced by an opposing reproduction. If the latter is absent, the movement as executed does not involve the so-called volitional processes. If more than one representation is present in the field of consciousness, it becomes necessary to choose, and the selection represents a voluntary choice. When there is no abnormal psychomotor irritation, movements resulting from choice not connected with great effort are made half involuntarily. The result is different when there are concurring impulses and centres whose instability is subnormal. An additional force is then necessary to focus the attention upon the idea of movement. This may awaken a subjective feeling of resistance that must be overcome. Associated with this there is a tendency of processes once initiated to persevere in face of the increased opposition; but working against this increased perseverance or perseveration of the process there are a limiting and inhibition of the various associational activities of the brain. As a result, the idea of movement or position, once in the field of consciousness, persists there until it is forcibly dislodged. A patient in a cataleptic state will frequently hold his arm in an uncomfortable position even when pricked with a pin or pinched or when another limb is put in an equally uncomfortable position. But if he is asked to execute a voluntary movement and is capable of responding, as the new idea associated with changed position or with a

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[13] Centralb. f. Nervenheilk. u. Psych., Juli, 1902, vol. xiv.

[14] Experiment. Beiträge zur Lehre von Gedächtniss. Ztschr. f. Psych., 1900, Supplement, Band i.

voluntary act rises above the threshold of consciousness, the old idea is dislodged and the arm first elevated slowly drops. It is claimed by some that a condition akin to this is common after severe mental or physical fatigue. It is not definitely proven, however, that all cases are capable of being explained on the same basis. Patients sometimes assume attitudes or give expression to stereotyped forms of speech as the result of a delusion. These catatonic symptoms may be initiated as the result of delusions, but may eventually become more or less automatic.

Imperative Processes[61]—A train of thought may be disturbed or even completely inhibited by the sudden spontaneous appearance in consciousness of ideas which are recognized by an individual as irrelevant and unreasonable. The occurrence of these ideas may be merely temporary or they may persist for so long a time as to harass and even terrify the person. One of their distinguishing characteristics is the inability of the individual to banish them from consciousness. These phenomena have received various names—obsessions, imperative ideas, perceptions, conceptions, or reproductions.

Closely allied to the imperative ideas is another group of phenomena in which the compulsion to perform certain acts seems to be the essential factor in their pathogenesis. Recently Bianchi[62] has suggested the possibility of roughly grouping these phenomena into (1) obsessional emotions, (2) obsessional ideas, and (3) obsessional impulses.

Westphal's[63] description of these processes was the one which for a long time was generally accepted by alienists. This author called attention to the fact that at least four factors were characteristic of them:

(1) The normal intelligence;

(2) Absence of any primary emotional disturbance;

(3) The imperative manner in which they force themselves into the foreground of consciousness;

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[61] Loewenfeld, L.: Die psychischen Zwangserscheinungen. Wiesbaden, 1904.

[62] Clinica Moderna, 1899.

[63] Arch. f. Psych., Bd. ii.

(4) Their recognition by the patient as foreign and abnormal.

In 1869 von Krafft-Ebing pointed out the frequency with which obsessions occur in certain forms of alienation. In fact, the relative importance of these phenomena was considered to be so great that certain psychoses in which they seemed to be the chief symptom were grouped together under the head of the imperative-process psychoses (die Zwangsvorstellungen-psychosen). Various conditions, such as fatigue, hunger, prolonged mental or physical exertion, seem to favor the development of these phenomena.

Friedmann[54] has recently called attention to the fact that the genetic conditions which give rise to these dominating conceptions are not well understood, and consequently any attempt to adjust our present knowledge regarding them so as to satisfy a purely clinical conception may lead to confusion. The difficulty of differentiating obsessions from various other phenomena which are associated with marked emotional disturbances is often very great. The same is true in regard to the difficulty of distinguishing the imperative conceptions which frequently occur during the course of various psychoses from the fixed ideas which often interfere with and dominate the reasoning powers of a patient. In order to facilitate the differentiation of these phenomena Friedmann has endeavored to explain the occurrence of the imperative idea on a different basis from the one given by Westphal. The latter's explanation may account for the simpler, compulsory reproductions, but this definition is inapplicable to the imperative ideas, impulses, or the imperative thinking so frequently observed in cases where the whole emotional and intellectual life of the patient is dominated by the obsession. Westphal's definition simply refers to the manner which characterizes the appearance of the perception in consciousness. It takes no account of the fact that the actual content of the reproduction may be a factor of considerable importance. Unquestionably

[54] Centralb. f. Nervenheilk. u. Psych., Nr. 144, 1902.

in some cases the enthralling power of the obsession may be due to the fact that the appearance in consciousness is so sudden and so distressing that all other psychical processes are inhibited. In other cases the agency of chance external stimuli may be admitted as an etiological factor. In these latter cases an obsession takes the form of an echo-like reproduction, as in echolalia. In conditions of fatigue or exhaustion patients frequently complain of the constant and annoying recurrence of certain tunes, melodies, phrases, verses of poetry, etc., which they have heard. The more aggravated forms, on account of their sudden startling appearance in consciousness, are in many ways analogous to muscular cramps. Certain authorities have spoken of them as "reproduction" or "memory cramps." Ribot has referred to them as characterized by a semi-tetanized attention (Aufmerksamkeit). As already stated, the forms which may be included under this head are comparatively few. Another factor is prominent in their pathogenesis. The simple memory of a past event does not form by itself the basis of an obsession, but the recollection of an unpleasant occurrence may awaken in the patient a degree of expectancy or fear, and this emotional state becomes, as it were, the nucleus around which obsessions may develop. In the majority of the imperative processes the element of futurity is always present. Theoretically, the difference between the *fixed idea* and the *imperative idea* is that the latter, more or less suddenly and without any relation to what has gone before, overwhelms consciousness, whereas the former develops more gradually and is, in a measure, a result of associative thinking. The fixed idea, granting the truth of the premise upon which it is based, is characterized by a logical development, the imperative idea is abrupt and illogical.

Wernicke attempts to differentiate autochthonous from exaggerated (überwertig) ideas. The latter, he thinks, are distinguishable from the former in never being recognized by the patient as strange and inexplicable intrusions into consciousness. Although they are frequently most annoying and persistent, patients do not recognize them as abnormal. Ac-

cording to the same view, in exaggerated ideas the pathological element in their genesis and in their content is not admitted by the patient, as it frequently is in imperative ideas or representations. It may be admitted that occasionally patients are capable of distinguishing autochthonous thoughts, whose content is strange and mystifying, from obsessions whose sudden and inexplicable appearance in itself emphasizes to the patient their abnormality. In many cases it is impossible to adopt such a rigid classification of these phenomena. Wernicke affirms that autochthonous ideas are distinguishable from obsessions in that the former are recognized as foreign to, and arising outside of, the individual personality, and on this account are believed to dominate more than do the latter the whole of the psychic life.

It has already been noted that the content of the obsession, although it frequently exerts an important influence upon the patient, has practically no relation to the ideas that have immediately preceded it in consciousness. Instead of being an active impulse which diverts and transforms a train of thought, it is more analogous to an inhibitory impulse which delays and disorganizes associative thinking. It is an obstacle to progressive thinking. The idea can not be banished from consciousness, and, as a result of this phenomenon, fear, expectancy, doubt, and isolated incomprehensible representations overwhelm and cloud the intellectual processes. The effect of the obsession upon the other psychological processes is not only irritating, but paralyzing. This is particularly true in the case of individuals where the normal associative thinking is defective.

Arnaud [83] calls attention to the fact that an obsession is in reality an extremely complicated phenomenon. It is characterized by a series of actions and reactions which profoundly affect the whole mental life as well as the organic functions causing disorder in the dynamics of the associative

[83] Arch. de Neurologie. Sur la Théorie de l'Obsession. Avril, 1902, p. 257.

mechanism of the brain. This is seen in the disturbance of some or all of the voluntary processes, including the higher intellectual functions. An imperative representation may be defined as a deficient mental synthesis,—an abulia. Arnaud affirms that the emotional as well as the purely intellectual element, the idea, both play an important but, nevertheless, secondary part in its pathogenesis. According to this theory, the emotional element is measured by the intensity as well as by the character of the "crises angoissantes" which accompany the obsession, but it is never the causative factor. Patients subject to these phenomena are conscious of their inability to banish the obsession from their consciousness. They live in apprehension of its return and this fact conditions their emotional state. The idea, in a measure, determines the formal character of the obsession. But the influence exerted by the idea itself is directly proportional to the degree to which volition is impaired. When the voluntary impairment is marked, the obsession attains greater significance. Especially is this true if the idea or representation is the immediate incentive to action. If it is, the case becomes of forensic importance. The compulsive acts which depend upon imperative representations or ideas must be carefully distinguished from those that are motiveless and the result of pure impulse. According to Ziehen,[56] the latter are also compulsory, but are motiveless and do not depend directly upon pathological emotional states, sensory anomalies, or representations. The impulsive act has no corresponding state of consciousness in which an idea of its abnormality is present. After its completion there is an intact memory and an undiminished power of retrospection.

Considerable attention has been devoted by some clinicians to the evolution of the obsession and to a discussion of the part played by these phenomena in the genesis of various forms of alienation. Falret and Menier affirm that an obsession is never so transformed as to become an important factor in the

[56] Monatsschr. f. Psych. u. Neurol., Bd. xi, Heft 1.

clinical picture of delirious states. This observation has not been generally confirmed.[37]

Cases not infrequently come under observation where the delirious state seems to be a direct evolution from the obsessions. There is reason to believe that obsessions are of prime importance in the evolution of certain forms of melancholia, mental confusion, the délire onirique, and in certain systematized deliria. Again there are cases where the persistence for a considerable period of time of these obsessions has given rise to states of mental depression of varying degree. For example, a patient, who was much prostrated physically by long-continued nursing of a member of her family afflicted with cancer, gradually began to notice that the impulse to wash her hands came to her at short intervals. The foolishness of these repeated acts was recognized by the patient, but the obsession continued and was a source of great annoyance to her. She became greatly depressed as a result of this impulse and feared that if it continued she would lose her mind. Although admitting that the frequent repetition of these washings was absurd, she affirmed that she was unable to resist the impulse. Observers have directed attention to the part played by similar obsessions in the disorganizing of associative thinking. The probable part played by obsessions in the development of paranoia is discussed under that head.

The following provisional grouping of these phenomena by Loewenfeld[38] forms a satisfactory clinical basis for their study:

A. Those in the intellectual sphere, which may be divided into two categories:

(1) More or less isolated and independent obsessions including imperative ideas, in the narrower sense of the

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[37] Seglas, J.: Soc. méd-psych., séance du 26 février, 1901; note sur l'évolution des obsessions et leur passage au délire. Arch. de Neurol., vol. xv, 2e série, 1903, No. 85 (janvier).

[38] Loewenfeld, L.: Die psychischen Zwangserscheinungen. Wiesbaden, 1904.

word, imperative sensations, and imperative hallucinations.

(2) The obsessive ideas of a more complicated form of mental activity, such as the forced questioning, folie du doute, imperative remembrances, compulsory thinking, excessive introspection.

B. The imperative processes which are chiefly characterized by anomalous emotional reactions, apprehensiveness with or without definite fears, imperative emotional states and moods.

C. The imperative phenomena associated with the motor discharge, impulses, a great variety of simpler movements as well as more complicated acts, and inhibitory processes.

Impulsivity.—The normal behavior of an individual may be profoundly disturbed as the result of impulses which may assume a great variety of forms and give rise to complications, many of which are of forensic importance. The mechanism of these impulses is not essentially different from that occurring in the normal individual. All grades exist, varying from those which can scarcely be called abnormal to those which are associated with the commission of the most brutal and disgusting crimes. From a clinical stand-point these impulses may be divided into those with disparate and those with coinciding motives. In speaking of the disturbances that occur in organic sensibility, it was shown how the ordinary sensations attending hunger, thirst, rest, and activity are sometimes perverted during the course of an alienation, and this change in the coenesthesia may be the basis of impulsivity. These forced acts may produce results of a more or less indifferent character or they may be attended by danger either to the individual or to others. An illustration of the former class is the impulse to keep in motion noted in nervous individuals and so frequently mistaken for normal healthy activity. These abnormal impulses of a more or less harmless character occur in a great variety of conditions, in hysteria as well as in the initial stages of various other psychoses. Frequently in the prodromal period of manic-depressive insanity there is a marked tendency for the indi-

vidual to be continually on the move. Again, some of these individuals, apparently without any good and sufficient motive, will sit down and write page after page. Reference has been made to the various other impulses in the consideration of the psychasthenic states. Among the many acts which are associated with danger to the individual or those who surround him only a few of the more important need be mentioned here. For instance, certain individuals show a tendency to steal at any and all times—kleptomania—or to set fire to property—pyromania. Both of these vices are common in the large class of individuals who are broadly designated as degenerates, as well as in epilepsy, senile conditions, and a variety of other forms of alienation. Suicidal impulses are not infrequent, and, as a rule, are much more common than the homicidal forms. In a consideration of the former we have to distinguish between those which are and those which are not the result of deliberation. The former are not infrequently met with, particularly in cases of hysteria and in the very early stages of alienation, at a time when the patient is particularly susceptible to suggestion. The impulse is closely related to a tendency shown by nervous individuals to jump from high places. As a rule, the suicidal tendency in these instances is a matter of purely momentary suggestion. Cases are on record where the mere sight of a sharp instrument, of a hammer, or of fire-arms has been sufficient to prompt the individual to attempt violence upon himself. The homicidal impulse, as has already been said, is relatively less common. In all probability Loewenfeld's view is correct that the homicidal impulse is never preceded by a fear frequently expressed by nervous individuals that they may do bodily harm to those about them, but comes suddenly and with overwhelming force. It may be suggested, just as in the case of the suicidal impulse, by the sight of fire-arms, sharp instruments, an exposed part of the body, such as the throat or the neck. Undoubtedly the mental pictures evoked by the revolting details of murder trials, as published in the daily press, have occasionally been sufficient to drive ill-balanced individuals to commit suicide, and less frequently homicide.

The sexual impulses assume a great variety of different forms and may play an important part in the symptomatology of several forms of alienation. Exhibitionism is frequently noted, particularly in the early stages of senile and paralytic dementia. Vices due to perverted sexual sensation—pederasty, nekrophilia, zoophilia, sadismus, and masochismus—the latter two designated collectively as algolagnia (v. Schrenk-Notzing)—have been carefully investigated by a large number of alienists[58] and are frequently of forensic importance.

VII. DISTURBANCES IN THE EMOTIONAL REACTIONS.[59]

Accurately to define an emotion in a single phrase is as impossible as to give an exact definition of the phenomena of consciousness, intellect, or, in fact, of any expression that is used in a relative sense. The emotions are singularly complex compounds that derive their importance largely from the accompanying neural disturbances. They consist of a complex series of phenomena which give rise to symptoms that only in a general way are distinctive; and for this reason the alienist should be exceedingly guarded in attempting to describe their characteristics in general terms. Each case must be studied on its own merits, and few, if any, rules can be laid down as guiding principles. An incident stimulus gives rise to a certain feeling, and this in turn to a desire, an act, and a subsequent sense of satisfaction or dissatisfaction, according as the wish is gratified or not; and to this complex of sensations others may be added until the links in the chain of mental processes become too numerous to analyze.[61] When a stimulus acting under normal conditions impinges upon the cerebral cortex with sufficient intensity for us to become con-

[58] Eulenberg, A.: Sadismus und Masochismus.

[59] Morel: Du délire émotif nerveux du système nerveux ganglionnaire viscéral. Archiv génér. de méd., 1866. Ribot: The Psychology of the Emotions, 1897. Sergi: Dolore e Piacere, Les Emotions, 1900. Finzi: Die normale Schwankungen der Seelenthätigkeiten (Deutsch von Jentsch), 1900.

[60] Die Lasse—Eine Aerztliche-psychologische Studie. Jentsch, Wiesbaden, 1902.

scious of it, a concomitant series of phenomena can be noted. To facilitate description, for the sake of convenience, these may be divided into two groups—mental and physical. If, for example, the finger is pricked with a needle, there are certain objective facts that may become obvious. There may be a change in the facial expression indicative of pain, accompanied or followed by a series of complicated muscular contractions resulting in the drawing away of the hand. Connected with these objective phenomena are those that are commonly described as subjective in character.

These two classes of phenomena—psychic and physical—are always present in emotional reactions, although the relative importance of the two is never constant and has been variously estimated by different observers. A series of optic stimuli may give birth to a definite and well-defined sense of fear. Here the primary visual stimulus has associated with it memory-pictures, sensations, and a chain of neural disturbances, all of which we refer to collectively as fear. The bodily changes are a cold and clammy skin, blanching of the countenance, increase in the rapidity of the pulse, and, it may be, a marked tremor. The psychic concomitants are manifold. There may be only an indefinite sense of anxiety or fear; or it may be that the possible effects of some supposedly imminent disaster are pictured in rapid succession and with considerable detail. These phenomena vary in individuals, and their intensity and extent are not constant, but fluctuate at different times in the same person.

Not only is it important that the physician should study the changes in the organic reactions, both mental and physical, that are to be observed in cases of alienation, but he must first familiarize himself with the fluctuations that occur in the life of the normal individual. In this way alone will he be able to understand many of the changes which occur during the course of alienation. In many instances the latter are simply to be regarded as representing an intensification of those reactions which have persisted during the whole life of the individual. Take, for example, the periods of depression to

which so many persons are subject.[82] One person may endure a series of misfortunes without any marked tendency to become really depressed, whereas in another every trifle serves to disturb the mental equilibrium. These varying moods are of such frequent occurrence in nearly every individual that they cannot be considered as abnormal. Thus in patients who for a considerable time have been subjected to severe discomfort or even pain, we shall often find that on the cessation of the irritation a reaction characterized by excitement and a certain sense of exhilaration follows. These reactive phases are not infrequently met with in convalescents from some protracted disease, such as typhoid fever. As has frequently been suggested, the slight exaltation that exists in cases of phthisis may be referable to some form of autointoxication. The anomalous emotional states that follow protracted mental and physical fatigue are well known. In many instances the fatigue causes paræsthesias in the field of body consciousness which are at the basis of the irritability and discomfort exhibited by many individuals.

The affective disorders are sometimes aggravated by anomalous mental states, more especially following hallucinations. The objective signs of anxiety or fear exhibited by patients who are the subject of delusions are of this class. The opposite condition is not infrequently met with. There may be a gradual or, at times, a sudden and spontaneous change in the physical condition of the patient. As a result of this state the power of connected thinking is limited or for the time completely inhibited. In both instances the extent of the reaction depends upon the functional capacity of the central nervous system. In the former case the neural disturbances predominate, while in the latter the disorganization and dissociation of thought become the more important feature. The physical changes upon which both series of phenomena depend disorganize or inhibit the cortical functions. Whether

[82] Lange, C.: Periodische Depressionszustände und ihre Pathogenese. Deutsch von H. Kurella, 1896.

the so-called psychic or the neural disturbances dominate, the clinical picture depends upon individual idiosyncrasies.

As has repeatedly been pointed out, our emotions are highly developed compounds, which it is frequently impossible, in view of the few facts at our command, to analyze clinically in their entirety. In the case of certain emotional disturbances it is sometimes possible to trace their rise from a sensation or feeling comparatively simple in origin. About this feeling as a nucleus are clustered other sensations, or it may be groups of sensations, which vary in character. All of these may be united into one sympoom-complex. The complexity, no less than the intensity, of these highly organized reactions depends directly upon the functional capacity of the central nervous system. The same idea may be differently expressed by saying that the emotional display of an individual is conditioned by that series of events which has directly affected the development of the central nervous system. The child at birth cannot be said to be an emotional creature. It is true that it cries in response to a stimulus, but this cry expresses neither pleasure nor pain. The physical phenomena are present, but the ideational part of the emotional display is absent. In the adult the conditions are different. As the nerve-cells and fibres in the cerebral cortex become functionally active, a series of phenomena are noted in the child that are the result of the greater elaboration and working up of the stimulus by the cortical elements prior to its discharge as an efferent impulse, and gradually in the course of development he becomes accustomed to respond in a definite manner to different forms of stimuli. Certain neural inclinations are established, and in time the growing brain responds more easily to one kind of a stimulus than it does to another. Finally, when the prime of life is reached, it is seen that the functional capacity of the central nervous system of one individual differs essentially from that of other persons. Certain neural inclinations have been established and the power of inhibiting or initiating the cortical functions has received a definite trend. One of the chief aims of education should be to adapt the emotional reac-

tions of an individual to his environment. These reactions must not be excessive nor incongruous. The nervous system must be trained to ignore the action of certain irritating stimuli. Hypersensitiveness and misery are, in a measure, synonymous terms. The proper development through education of the nervous system of neural inclinations or disinclinations is a matter of prime importance.

In the adult the mental processes have different shades and degrees of coloring. This is commonly expressed by saying that each thought and act has its accompanying mood. These moods or states are the qualifying factors in sensations due either to intra- or extra-organic stimuli. A given sensation may be attended by a sense of pleasure, but if its intensity is increased and its duration prolonged, a definite sense of pain develops, thought is disorganized, and, as a result, doubt, instability, or anger may result.

The manner in which the organism reacts to stimuli conditions the appearance of the mood. The reactions are in part the result of congenital factors and in part of trends acquired through education and environment. In normal thought and action there is deliberateness, no incongruity, no sudden cessation or break in the physiological processes. In alienation the reverse is true. Thus impulses, imperative conceptions, or strange organic sensations break in upon and inhibit or repress a line of thought or action. The dominant note of the mood is frequently characterized by great permanence and a marked tendency to reiteration. All forms of stimuli seem to intensify but not to alter its form. The patient who suffers from mental depression sinks deeper into his gloom whenever he is stimulated; it matters little what the character of the sensation may be. A waltz or a comic song is quite as apt to increase the intensity of mental pain as the sound of a dirge or funeral anthem. The same principle holds in cases of exaltation. Everything serves to magnify the sense of well-being and to add to the feeling of exhilaration. No event is too solemn, no situation too serious, to detract from the levity and buffoonery of some maniacal patients.

Mood is a collective term used to express the mental tone accompanying a thought or act. It indicates the existence of modifications that have taken place in the process of the working up and elaboration of stimuli. Moods tend to persist, since the equilibrium is only gradually restored to the normal. In cases of disease this persistence of definite mental tones is often exaggerated. The mood once established becomes in a measure permanent. It gives direction to the whole train of thought. Out of the various organic needs pressing for satisfaction develops the mood, and this in turn dominates for the time the whole field of psychic activity. To-day all forms of stimuli seem to give rise to disagreeable ideas. The whole mental attitude is one of depression, but a night's rest changes the whole character of our mentality. By common consent certain moods are designated by definite terms, such as pleasurable, painful, etc.

Some observers maintain that a sensory impression, as it appears in consciousness, is associated either with a sense of pleasure or pain, but such a view exaggerates the importance of these two tonal elements. It is possible that as the result of our environment and education our nervous system responds without effort to certain kinds of stimuli. A mental reaction which in one individual may be accompanied by a distinct sensation of pleasure or pain in another is neutral. From this it is not justifiable to draw the inference that normal thought or action is completely unaccompanied by neural disturbance, but rather that a stimulus which in one individual is attended by a series of complicated psychic and physical reactions, a sense of conscious effort, and a needless expenditure of energy may in another person fail to elicit evidences of great neural disturbance.

The diminution or impairment of the objective emotional reactions is frequently noted in cases of alienation. In imbeciles or idiots an imperfect development of the cerebral cortex may be responsible for the persistence of a less complicated psychic and yet more intense physical reaction. The imperfections and intensity of the emotional displays of childhood

are well known. In children the defect in the mental elaboration of the stimulus is characteristic. What may be termed the neural reactions are well developed, but the psychic are in abeyance. Those who suffer from congenital or acquired defects of the central nervous system are particularly liable to emotional storms of great intensity, owing to the decreased power of inhibition. On the other hand, the so-called higher or intellectual emotions are only developed to a limited extent.

In the earlier stages of dementia præcox there is marked impairment in the intellectual side of the emotional reactions. In fact, the essential characteristic of this disease is said by Stransky to be the dissociation between the idea and the corresponding emotional reaction—an intrapsychic incoördination. In some cases any form of sensory stimulation may give rise to incongruous and intense reactions. Thus some patients while sobbing will nevertheless affirm that they feel in the best of spirits or laugh when there is absolutely no occasion for any display of mirth. Their attitude towards their surroundings changes; they become unsociable and appear to have lost all affection for their friends and even for members of their family. As the disease progresses they become more and more emotionally indifferent, until finally only those reactions are retained that are the immediate expression of the physical needs of the organism.

In some cases the patient is conscious of his limitations, and recognizes that his emotional state is anomalous. This is more apt to be the case in hysterical or neurasthenic individuals than in the earlier stages of a condition that eventually is to develop into a pure psychosis. In the latter an apathy often comes on synchronously with the change in the emotional tone, whereas a neurasthenic patient not infrequently affirms that he has lost interest in his surroundings and friends; that his ideals are things of the past; and he is apt to be depressed mentally by the consciousness of this subjective disorder. The defects in the emotional life of individuals are often associated with a tendency to an exaggeration of the reactions that are retained.

An increase in the intensity and volume of the physical reactions in the emotional display is characteristic of various forms of mental disturbances. On the other hand, the immediate effect of a stimulus upon an over-susceptible nervous system may be almost a complete inhibition of the associated functions of the brain. The individual may even lose consciousness or the cortical functions may be only partially inhibited, giving rise to a state of confusion. Intense emotional reactions are not uncommon in neurasthenics. These individuals, by their environment and training, have little capability for ignoring irritants. They are hypersensitive and exhibit to a marked degree the evils of interpreting pleasure and pain merely in terms of sensation. The slightest external stimulus serves to direct their attention to themselves, and there it remains fixed until diverted by a stronger irritant. Their lack of mental equilibrium is often characterized by intense anxiety, grief, pleasure, and pain, which succeed each other with great rapidity. Emotional instability and its concomitant reactions are exhibited by many epileptics, who on the slightest provocation are intensely pleased or greatly displeased. Again, the epileptic is apt to be capricious, and not uncommonly is the subject of sudden and inexplicable outbursts of temper.

The excessive volume and intensity of the emotional reactions in the insane are not infrequently associated with psycho-anæsthesias. Thus in many maniacal patients a psycho-analgesia is readily demonstrable, the patients throwing themselves about the bed or the room and often inflicting serious injuries upon themselves without giving any objective evidence that they have the slightest appreciation of painful sensations. Even when the actual conduction of sensory impulses from the periphery is not impaired, the patient's attention is sometimes so firmly riveted upon certain objects or upon the execution of certain muscular movements that peripheral irritation is ignored. This fact doubtless explains the cases of insane persons who, being impressed with the delusion that they are superhuman, inflict severe bodily injury upon themselves. The

spirit of exaltation, the tetanization of the attention, and the resulting psychic analgesia explain the deeds of many self-torturers, not only among those who are clearly insane, but in certain border-line cases—for instance, those of fanatics and many so-called martyrs.[42] In these cases stimuli that under normal conditions would produce marked neural disturbances fail to do so and the individual remains indifferent, experiencing neither pleasure nor pain.

The study of the objective evidence of neural disturbances in the emotional reactions is important. Thus in states of exaltation the rhythm of the breathing, as well as the character of the cardiac action, is altered. The secretion of sweat or urine is often interfered with, and there may be marked disturbances of function of the voluntary and involuntary musculature. Exaltation may in a measure be considered antithetical to depression, and the physiognomy in the two states is essentially different. In the former the skin over the forehead is smooth or thrown into slight horizontal wrinkles, the eyebrows are elevated, and the eyes show an increase in the secretion of tears. The corners of the mouth are raised. In states of depression the condition is reversed. In young children, idiots, and in some forms of dementia the neural disturbances accompanying states of depression and exaltation are, in a measure, similar. The effects of an outburst of anger may influence the whole musculature. If the reactions are greatly exaggerated, there may be a complete inhibition of certain motor functions followed by an increase in the intensity and volume of others. The statement that in the former condition there is a high intracranial tension, while in the latter it is subnormal, is a pure hypothesis. Unquestionably, in many instances the depression is associated with increased tension in the peripheral arteries and exaltation with the opposite condition, but from these observations alone deductions regarding the state of the cerebral circulation are not justifiable. As a rule, those emotional displays may be said to be

[42] Mercier: Psychology, Normal and Morbid, 1901.

abnormal in which there is evidence of marked dissociation of the cortical functions.

Considerable variation in the emotional display in patients who are the subjects of the same form of alienation is not infrequent. For example, in one case of maniacal excitement there may be marked motor restlessness, a rapid pulse, tremor, and all the objective evidences of considerable neural disturbance, and accompanying the physical symptoms the characteristic rapid flow of ideas indicative of psychic hyperæsthesia. In another patient there may be a marked disproportionateness between the physical and mental concomitants of the emotional instability, sometimes the former, and again the latter predominating.

Closely associated with the neural disturbances in the anomalies of emotion are the feelings or groups of sensations which are designated moods or feeling-tones. In certain instances, as has already been said, these moods are devoid of color, and no one feeling dominates the clinical picture. The patient may be indifferent or apathetic. In certain delirious states the apathy is broken only by the performance of acts that are apparently the result of various impulses depending upon changes in the organic sensations. In other cases marked anxiety is the dominating symptom. This is frequently indefinite in character, the patient not being able to assign any cause for his mental distress. Some clinicians affirm that this anxiety, so often a prominent symptom in mental disease, possesses the characteristics of a distinct emotion and is attended by a definite sense of mental pain. In the majority of instances, however, the ideation associated with the neural disturbance is ill-defined. Patients in this state frequently declare that they cannot describe their feelings. The investigations of Kornfeld [54] are of interest in connection with the determination of objective evidences of neural disturbances in cases in which anxiety is a prominent symptom. Not only is there marked alteration in the tone and functional capacity of the

[54] Zur Pathologie der Angst. Jahrbücher f. Psychiatrie, Bd. xxii.

skeletal muscles, but this functional derangement involves the muscular elements in the walls of the blood-vessels. This is shown by the rise of blood-pressure and the variations in character of the pulse-wave. The anomalies of glandular secretion are particularly noteworthy. The rapid rise in blood-pressure which occurs as the emotional storm gathers is followed by an equally rapid drop, beginning when the patient breaks out into a profuse sweat.

The anxiety of cortical origin that is met with in cases of alienation, according to Souqué,[65] should be sharply distinguished from the præcordial anxiety, which is a bulbar symptom. The latter is a definite symptom-complex, characterized by a sense of depression or suffocation, while the former, equally intense, is characterized by vague apprehensiveness.[66] The two states may appear independently in the same case. The objectless, indefinite feeling of anxiety so common in various forms of alienation not infrequently crystallizes into fear. This change may be due to the occurrence of hallucinations or delusions. Löwenfeld has suggested the following classification of the various states of anxiety.

(1) Those relating to the health of the individual. (2) Those in which there is excessive apprehensiveness in regard to questions connected with ethics and morality. (3) Those relating to the health of members of the immediate family or friends. (4) Numerous others connected with the individual's profession or particular view of life.

The indefinite crystallized fears are most noticeable in cases in which there are marked hallucinatory disturbances, such as those due to alcohol, cocain, and various drug intoxications. The phobias associated with obsessions, though common in neurasthenics and hysterical individuals, never give rise in these patients to severe emotional storms as sudden in their onset and incongruous in their nature as those found in

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[65] Société de Neurologie de Paris, December 4, 1902.

[66] The difference between these two phenomena is indicated by French writers, who distinguish between *angoisse* and *anxiété*.

various psychoses. In cases of depression the feeling-tone varies from the mildest to the most intense psychic pain. The feeling of mental depression may be secondary, depending upon the occurrence of hallucinations or delusions, as is the case in the early stages of melancholia or the manic-depressive insanity. The mildest forms, those without motive or dominant idea, and on this account called primary, are met with in various forms of nervous and mental disease as well as in childhood and old age.

VIII. ANOMALIES OF CONDUCT WITH ESPECIAL REFERENCE TO THE SO-CALLED MORAL INSANITY.

Somewhat analogous to the anomalies of connected thought which have been shown to be related to the development of insane ideas are the various disturbances of the so-called moral and ethical sense. In 1835 Pritchard in England first suggested the term "moral insanity" to designate a not very uncommon group of cases in which the acts of the patients are characterized at times by startling moral obliquities. For some time these cases were regarded as forming a group by themselves owing to the belief that they possessed many characteristics in common. Long before Pritchard's time, however, this type of aberration had already attracted the attention of alienists, and excellent descriptions of it are to be found in Pinel's writings under the head of mania without delirium, or, as Esquirol called it, the affective or instinctive monomania. The attitude of the English alienist in the study of the problems suggested by these cases was largely the result of the psychology of the day, which taught that the division of the brain functions was tripartite, and that each of these was characterized by more or less independence, so that one group of phenomena in the realm of thought, feeling, or volition might be seriously interfered with without causing a disturbance of the others. The Scotch and French schools of philosophy had also inculcated the belief in the existence of a definite and distinct "moral sense" that was capable of distinguishing between good and bad, just as the touch differ-

entiates between heat and cold or the eye between black and white. Owing to the study of cases *en masse* and the influence of this scholastic type of psychology, it became customary to speak of the ethical and moral lapses of individuals as if they were to be regarded as isolated defects of the higher cortical functions. Gradually, however, physiologists not only succeeded in analyzing the sensorial processes, but were also able to show that all the cerebral functions were composite. In the light of these investigations, the term "moral insanity" came to be looked upon merely as satisfying a provisional requirement to designate a certain large group of heterogeneous cases. At the same time, its introduction into psychiatrical literature was of historical significance, inasmuch as it amounted to a tacit assent to the proposition that the behavior of an individual was merely an expression of the functional activity of the central nervous system, and that in the ultimate analysis it could be shown that "men's characters must be in part determined by their visceral structure."

The phenomena concerned in the study of human conduct cannot be thought out by the metaphysician, nor is any reasonable person willing to admit that the categorical imperative, or "the still, small voice of conscience," are any longer to be regarded as satisfactory explanations for the behavior of an individual. Only as the result of patient, painstaking observation are we gradually getting some clue to the motives and agencies which are at work in determining the simplest acts of an individual, and a few guiding principles have already been laid down that are of use in directing the inquiry concerning the more complicated volitional processes. These inquiries necessarily relate to the nature and development of individual character and by the laity are supposed to deal with the cases which are referred to as occupying the boundary line between sanity and insanity. As a matter of fact, such intermediate stages never exist. An individual is either normal or abnormal, well or ill; and to suppose that intermediate stages exist is merely playing upon words.

As certain phases of this problem are considered else-

where in this book, we propose to confine the present discussion to those cases in which the element of choice and deliberation seems to be an important factor in conditioning the behavior of an individual. We may, therefore, exclude at once all those cases in which the acts of an individual are merely the result of chance impulses or obsessions, such as the impulsivity that is so common in the dream states of hysterical or epileptic conditions, in the early stages of dementia præcox, or in other psychoses. It is a curious comment upon the looseness and illogical character of human reasoning, that while an individual is exculpated for a crime when it is proved beyond doubt that he has been acting merely as the result of a blind impulse, the plea of insanity may not be entered when an act is the result of an apparent deliberation or choice. Suppose, for example, that a crime has been committed by a man who possibly for months has deliberated upon a plan of action and has finally selected the one best adapted to some foul end and where no evidence will be left behind which will incriminate him. Such an individual undoubtedly, in a certain sense, indicates more plainly than does the person who is actuated by mere impulse that his cerebral processes are deficient and that he can neither think nor act up to the current standards by which conduct is judged. For physiology teaches us that only individuals possessing the most complete functioning of the higher centres are capable of successfully inhibiting many morbid tendencies of thought or action.

One duty of the alienist, therefore, is to attempt by the aid of careful investigation to throw light upon the biological factors conditioning the determinism upon which the conduct of individuals depends. Here we have to distinguish between the influence exerted by personal characteristics, inherent tendencies and traits, and the determinism that is the product of environmental agents. A sharp distinction can not, however, always be drawn between the two, and, furthermore, this problem necessarily involves the discussion of those complex phenomena of heredity to which reference is made elsewhere. In addition to the more remote factors that determine the

behavior of individuals, the clinician has to consider those that act more directly and that for want of a better term may be called the immediate provocative agents. Such, for example, are the physical changes that occur daily, or even hourly, in the individual, so that he becomes responsive to certain forms of stimuli which at another time would produce little, if any, positive reaction. At present investigations carried on in the clinic with a view to attempting the solution of this and similar problems are largely casuistical in form. Nevertheless, much important information may be gathered from studies of this nature.

In taking up the question of individual behavior, then, we have from a purely practical stand-point to consider all the events or conditions that influence connected thinking, deliberation, choice, and finally the act or series of acts which may be regarded as the culmination of these processes. Of course, they are not to be regarded as separate and distinct, but are merely designated empirically by the terms referred to in order to facilitate description. Certain phases of this question have already been discussed when dealing with the volitional processes. Naturally, each case must be studied on its merits; but, broadly speaking, the higher the intellectual type, the more complicated the processes of conception, deliberation, and choice.

In order to arrive at any real understanding of the behavior of individuals it is essential to become familiar with the slight anomalies in conduct which so frequently come under the observation of the physician and in which the complexity of the phenomena concerned is not so great as to baffle analysis. Let us consider for an instant the possible approaches that may be made to the study of the conduct of an individual who is imbued with the spirit of pessimism. Under this term may be grouped together all those philosophical views which affirm that suffering and pain more than counterbalance the sum total of life's pleasures and happinesses. Certain forms of pessimism find their immediate expression not only in the countenance but also in the acts of an individual. If we at-

tempt to analyze the physical condition which underlies this view of life, it is possible to bring to light a number of facts which will have an important bearing upon the mental attitude of the individual who entertains these ideas. In certain forms of pessimism it is at once noticeable that there is considerable impairment of the volitional processes, and individuals so afflicted give expression in one way or another to the subjective sense of insufficiency and abulia. They not infrequently spend their time in lamentation. It is easier for them to cry out that "all is vanity and vexation of the spirit" than it is to act. Kowalewsky [67] has gone so far as to affirm that the asymmetry in the relation of the pleasure and pain functions that exists in pessimistic individuals is the underlying cause which determines their views. Such observations can frequently be confirmed in the clinic by the study of the large group of neurasthenic individuals who, when subjected to any additional strain, are immediately thrown into a state in which anxiety, apprehensiveness, and mental depression become dominant factors in the symptomatology. In the more severe cases a more or less complete change in the whole personality follows. Another important factor in the genesis of these conditions, where the volitional processes seem to be more or less interfered with, is the tendency exhibited by such individuals to excessive mental rumination.[68] Up to a certain point the judgment and critical faculties are well preserved, but, as Maudsley long ago pointed out, action seems to be blocked by the tendency exhibited by men even of great intellectual capacity to expend their energies in introspection or in the minute analyses of certain trains of thought. A classic example of such a type is that portrayed in Hamlet. In the transition from the socially disposed pessimist to the misanthrope we can trace a gradual unbroken line, as we can between the latter and the extreme anarchist. The different links in the chain may be filled in by careful clinical study.

[67] Kowalewsky: Studien zur Psychologie des Pessimismus. Wiesbaden, 1904.

[68] La Logique morbide. L'analyse mentale. N. Vaschide. Paris, 1903.

Similar methods of investigation are also applicable to a variety of other conditions. In a study of criminality, just as in a study of psychiatry, progress has undoubtedly been delayed at times by the excessive zeal exhibited by a few observers in their desire to pick out and formulate definite types which they would judge by purely arbitrary standards. Imbued with this idea, Lombroso attempted to create a special class, as it were, which was to comprise all the various types of criminals. In a measure these delinquents were supposed to be fundamentally different from the normal man, and were remarkable not only for their vices but for the anomalies in physical structure which were supposed to be more or less distinctive. Undoubtedly, such a view is too extreme to be accepted literally. In studying these delinquents such a great variety of factors must be taken into account that it becomes impossible, except in a very general way, to find characteristics that in the main are distinctive. Nevertheless, alienists and legislators have come to recognize a class of individuals—incorrigible recidivists, predestined to lead lives of violence and crime—as presenting the characteristics of Lombroso's delinquent. As a rule, these unfortunates present considerable mental impairment along certain lines; they are subject to vicious impulses and are apt to be completely deficient in sympathy and altruistic qualities. Ferri has divided them into the following categories: (1) those with impaired intelligence and bad congenital tendencies; (2) those in whom the intellectual faculties are less involved, but who are signally addicted to debauchery, vagabondage, and crime; (3) those who are unable to persevere in any serious occupation during life, who show deliberateness in the manner in which they act, but who seem incapable of resisting the vicious impulses to which they are frequently subject.

Nacke[69] has suggested the following provisional classification of individuals in whom anomalies of conduct are pronounced: (1) imbeciles; (2) those in whom the moral and

[69] Nacke, P.: Ueber die sogenannte Moral Insanity. Wiesbaden, 1902

ethical defects appear cyclically; (3) the so-called psychic degenerates (in the sense in which Magnan employs the term). Koch[78] affirms that the moral defects are a sign of congenital psychopathic degeneracy, and would differentiate an active and a passive form. Brunet recognizes three grades: moral idiocy, moral imbecility, and moral debility. The classification, however, is of relatively less importance than the study of the symptomatology of the individual cases and the methods to be adopted in studying such individuals.

Whether cases of so-called moral insanity occur without accompanying intellectual defects is a much debated question. Some observers affirm positively that cases of marked defects in the ethical and moral sense are frequently noted without demonstrable changes in the intellectual spheres, but an equal number hold a contrary view. The difficulty arises in determining what type of anomaly shall be classified under the head of an intellectual defect. The whole controversy, undoubtedly, is a survival of the idea that the functions of the brain were more or less isolated and that one field might be invaded without seriously interfering with the mental phenomena of another. It would scarcely exist if the merely relative character of the phraseology were more generally recognized and greater attention were paid to the study of individual cases. Unquestionably, instances occur in which the most prominent anomalies are in the emotional reactions and where impulsivity may be marked, although a casual investigation fails to demonstrate the existence of any mental impairment. Such cases should be described sufficiently at length to permit whoever reads the record, and has sufficient medical knowledge, to form his own opinion.

Schultze sees in these cases no evidence of general mental impairment or feeble-mindedness, but attempts to explain the phenomena as an evidence of a psychic degeneracy which renders the individual unable to modify the automatic egoistic instincts sufficiently to permit of the development of any

[78] Die psychopathischen Minderwerthigkeiten. Ravensburg, 1893.

altruistic feelings. According to this view, the personal interests are so strong that the individual is unable to detach himself sufficiently from what immediately concerns himself to develop an interest in any action with which he himself is not more or less directly connected. Such an hypothesis, however, assumes that the disturbances of function must be exceedingly complex and accompanied by serious interference with the more complicated forms of associative memory. Others find in the emotional instability belonging to moral insanity an exemplification of the condition which Wernicke describes as the levelling off of ideas. Such individuals are more or less neurotic, exhibit some degree of unrest as well as an instability of the emotional life. In dealing with these cases, as in other forms of alienation, it must not be forgotten that the original defect in function, although sometimes comparatively slight, may give rise to a disturbance which is to be regarded as a cumulative one. Numerous observers have demonstrated that a relatively insignificant mental defect may be followed by a considerable degree of so-called moral degeneracy. According to Thulié, most of the youthful criminals may be classed among the "higher degenerates"—*déséquilibrés*, or those described as being instinctively vicious.

CHAPTER IV

THE METHOD OF EXAMINATION OF PATIENTS, INCLUDING EXAMINATION OF THE CEREBROSPINAL FLUID[1]

WHENEVER the alienist is called upon to examine a patient he has a three-fold duty to perform. In the first place, to determine whether or not the individual is suffering from any form of illness. If this question is decided in the affirmative, it then becomes necessary to find out if possible the causes which have been instrumental in bringing about the illness or that favor its development and continuance, as well as all other factors bearing upon the case, in order to determine upon a thoroughly rational course of treatment. And, finally, he must endeavor to study every case that comes under his observation with such care and accuracy as to bring to light any new facts, no matter how trivial they may at first sight appear, that will lead to a more comprehensive knowledge of mental disorders. These results can only be obtained by adopting those measures which are necessary to cultivate and train the faculties of patient and accurate observation. Those who appreciate how difficult it is to obtain careful records in the cases of so-called physical disorders will appreciate the still greater difficulties which exist in the examination of those who are afflicted with alienation. The reasons for this are, in the first place, the absence of symptoms which can in any sense be regarded as pathognomonic and the fact that the alienist at present is dealing not with definite disease entities, but simply with groups of symptoms. One of the first difficulties to the more complete and thorough examination of patients will be removed when we possess a supply of men who are not only trained in clinical observation, but who are capable of recording the results of their investigations in simple, direct expression. Unfortu-

[1] Sommer, R.: Lehrbuch der psychopathol. Untersuchungsmethoden. Berlin, Wien, 1899. Fehrmann, M.: Diagnostik u. Geisteskrankheiten. Leipzig, 1903.

nately, a great deal of the clinical phraseology has a specific meaning attached to it, and clinicians have too frequently yielded to the temptation to abbreviate and to substitute terms which have a relative significance for simple detailed descriptions of cases. The taking of records on especially constructed charts on which a list of symptoms is printed, the observer being expected to state categorically whether such a given symptom is or is not present, is a most pernicious practice, because, other things being equal, the employment of such charts generally indicates that those who are to take the clinical histories have not been sufficiently drilled in the methodical examination of patients. Psychiatry has passed through the era when it was considered sufficient to study cases en masse, and everything should be done in order to encourage the careful, detailed observation of every individual patient. During the conduct of the clinical examination it should always be borne in mind that the whole personality of the individual is more or less involved. Mental disorders are not merely brain diseases with localized disturbances of function, and we must be continually on our guard lest we gradually fall into the habit of seizing upon certain symptoms or certain phases of the disease, while others are ignored. In cases of mental disorder more than in others there always exists a strong tendency, which must be continually combated, to make the clinical picture fit some arbitrarily constructed frame.

ANAMNESIS.—*Family History.*—Only very rarely is it possible to obtain from the family history sufficient data to justify any deductions that have any immediate bearing upon the problems of heredity. Nevertheless, in the majority of cases we shall be able to gain from such an inquiry a fairly good idea with regard to the environment in which the individual has been living. If alienation is found to have existed in a patient's family, we should find out whether it was a progenitor, a descendant, or a collateral that was affected, what was the probable cause of the trouble, and the age and environment of the individual in whom the disorder made its appearance. If possible, a sufficient number of facts should be recorded

to enable any one who subsequently reads the history to form his own opinion as to the medical character of the malady. If the occurrence of pronounced mental alienation is not admitted, we should search for any symptoms of mental deterioration or degeneracy—suicide, alcoholism, eccentricities of character, and the like—that would indicate the existence of functional disorders. Some light may also be obtained from definite data concerning the causes of death in the cases of various members of the family—apoplexy, convulsions, tuberculosis, Bright's disease, etc.

Regarding the parents of the individual, it is important to note whether they were blood relatives; whether one or both were alcoholics; whether there was any marked discrepancy in their ages, and so on. The question of lues in the parents must always be kept in mind, but of necessity, although searching, our inquiries must be made cautiously. When direct questions can not be put, or when put can not be answered, we should try to find out whether there has been a history of skin eruptions, sore throat, falling out of the hair, rheumatic pains, bone diseases, frequent miscarriages on the part of the mother, etc., as such points, even when not conclusive, have always a certain significance, the importance of which should be carefully weighed. Information regarding the social and intellectual status of the family and whether there have been any sudden changes in these conditions is also of importance. As has already been pointed out, a sudden change in the social status of a family, such as that following the sudden acquirement of great wealth, or the sudden transformation that sometimes follows the relinquishing of manual for intellectual pursuits, is often, particularly in this country, accompanied by the appearance of nervous or mental disease.

Personal History: Infancy and Childhood.—This should begin with questions regarding the condition of the mother during pregnancy, especially, did she suffer from nephritis, any acute infectious disease, trauma, mental shock, or sudden change in her mode of life? Following this an attempt should be made to ascertain the conditions under which birth occurred—whether

at full term or prematurely, whether it was normal, protracted, or instrumental, and the apparent effects upon the child. What infectious diseases or trauma occurred during the early years of infancy? Such incidents should be noted, and we should attempt to determine whether or no there was any subsequent impairment in the mental or physical development of the child. If a history of convulsions be obtained, their probable cause, duration, and frequency should be recorded as well as the nature of any paralyses that may have followed. At what age teething began and whether the process was accompanied by any unfavorable signs; at what age the child learned to walk or speak; the severity, duration, and sequelæ of the so-called children's diseases, should all be made the subject of particular inquiry. The signs of rickets should be carefully distinguished, and a full note be made, if possible, upon the mental traits of the child—as to its impressionability, nervousness, fears, waywardness, temper, and whether it had to be treated differently from other children. The age at which schooling began and the progress made should be stated.

Puberty.—The mental and physical state of the patient prior to the onset of puberty having been recorded with as great detail as possible, a note of contrast as to the changes that may have taken place at this critical epoch should follow. Was the mental and physical development precocious, delayed, or in any way abnormal? Particularly important at this stage are the eccentricities of character. In girls the age at which the menses appeared should be noted, as well as such attendant circumstances as anæmia, nervousness, pain, signs of mental depression, hypochondriasis, and an excessive exhibition of religious conviction.

Continuing, the development of the individual, both physical and mental, should be traced, and any instances of impairment of the physical vigor should be cited, particularly the occurrence of an attack of any infectious disease—such as typhoid fever, pneumonia, malaria, meningitis, gastro-intestinal disturbances,—as well as of any constitutional diseases—syphilis, tuberculosis,—and any of the various functional dis-

orders—hysteria, hypochondriasis, epilepsy. What were apparently the immediate and remote effects upon the individual? In febrile disorders the occurrence of delirium or convulsions or mental disorders may have an important bearing on the subsequent history. If trauma or an attack of some disease is recorded, the facts should be given with sufficient detail in the history to enable a reader to determine for himself whether this factor is to be considered of importance in relation to subsequent events in the life of the individual. Personal idiosyncrasies, the evidences of a neuropathic constitution,—such as marked fluctuations in the emotional life, a tendency towards excessive blushing, palpitation, attacks of nervousness with apprehension and fear, excessive morbidity, intolerance for alcoholic beverages, mental irritability, as well as an inability to bear pain or mental distress,—should be recorded.

The emotional life of the individual should be carefully investigated and the attempt made to determine whether fluctuations in it apparently became more or less marked after puberty or whether a marked indifference to higher interests and a loss of an altruistic spirit developed. Was there any tendency shown towards the formation of marked antipathies either for persons or objects? Was such a condition dependent upon the result of chance impulses or did it develop slowly from what were first groundless and fleeting suspicions but later were transformed into definitely crystallized and fixed ideas? The individual's general view of life, characterized by excessive optimism or pessimism, and any apparent lack of ability to adapt himself to his surroundings should be explicitly described. As the individual became older the cropping up of personal eccentricities, an exaggerated egotism, and an abnormal tenacity of personal views on social, political, or religious questions, the quality of temperament indicative of a phlegmatic, apathetic, excessively ambitious, or jealous nature, deserve attention. An attempt should be made to determine whether all the faculties were developed harmoniously or whether intellectual progress took place along certain limited lines. If the individual showed remarkable attainments in one

direction, were there corresponding defects in others? Of what nature were his social relationships, particularly regarding the members of the immediate family? In the examination of women particular attention should be paid to the slight anomalies of the mental functions that may be associated with the menses. Was there an increase of nervousness, or any degree of mental depression? The same points are of importance in connection with pregnancy and the climacterium. At what period did the mental anomalies first make their appearance, and what was their character?

PRESENT ILLNESS.—*Course.*—When possible it is desirable to establish a more or less definite date at which the patient was last said to have been in "good health," and then to trace, as logically and connectedly as possible, the development of the symptoms from that time on until the moment that he first came under observation. From the information obtained it will be noted whether the present illness is the first attack of alienation or represents merely a recurrence of symptoms that have been noted in other periods of life.

The primary operative causes must be sought for and the character of the symptoms, their course and development, determined, as well as the sudden or gradual appearance of the alienation. All the physical ailments should be carefully noted in as minute detail as if an examination were being made in a case of typhoid fever or pneumonia, after which particular attention should be paid to all the mental symptoms, anomalies of memory, impaired intellectual capacity, a diminished or excessive feeling of fatigue, fluctuations in the emotional life, changes of character, moral defects, psychic painful states or depression, fear, intellectual and physical disquietude, pessimism, excessive optimism, reticence or loquaciousness, dream states, the "wandering manias," any tendency towards extravagance and a reckless plunging into new undertakings without waiting to count the cost, and any other evidences of mental peculiarities. The appearance of imperative processes, hallucinations, delusions, ideas of reference, insane ideas and their apparent influence upon the conduct of the individual, should be

recorded. The apparent relationships between the mental and physical disturbances should be sought for and noted. What effect did these anomalies in mental activity have upon sleep, upon the weight of the individual, upon the secretory or the excretory functions? When a full history of the individual symptoms has been obtained the attempt must be made to show whether the course of the malady has been continuous, intermittent, or remittent, and if the relation of the various symptoms to each other has been constant or changing.

Status Præsens.—When the individual is not greatly excited the physical examination is usually undertaken as soon as the history has been completed. But when the motor restlessness is very great, or if for some other reason a thorough examination is contraindicated at the time of admission, it is always not only possible but most important to make a careful note upon the mental state of the patient according to the methods to be referred to presently. The physical examination should be as complete as that made upon patients in the best general hospitals, into the details of which it is not necessary to go at present. In regard to the observation of the physical symptoms the following points should be noted, although no hard and fast scheme should be adopted (vide Lehrbuch der Psychiatrie, v. Krafft-Ebing, Wien, 1904, p. 243). The measurement of the skull along a line just above the external occipital protuberance and glabella should always be taken. Although the normal for men is 55 centimetres, and for women 53 centimetres, variations within certain limits are not uncommon, and for practical purposes all skulls whose circumference does not fall below 48 or exceed 56 may be considered normal. The ordinary distance between the extreme lateral points of the skull measured by means of the calipers is between 14 and 15 centimetres. Other signs of physical degeneracy are to be looked for in connection with the

(1) *Eyes:* Rhombo-, lepto-, and clino-cephalus. Retinitis pigmentosa, coloboma iridis, albinism, unequal pigmentation of the iris, congenital strabismus.

(2) *Nose:* Any unusual prominence or malformation of

the nose; *e.g.*, the thickening of the lateral roots noted in myxœdema and cretinism.

(3) *Ears:* Morel's ear, smooth helix; the Darwinian ear, satyr-shaped with prominent tubercles; Wildermuth's ear, in which the antihelix is proportionately much larger than the helix.

(4) *Teeth:* Total or partial defect in secondary dentition; abnormal position of the teeth.

(5) *Mouth and gums:* Excessively small or large gums, as well as anomalies of the hard and soft palate.

(6) *Skeleton and extremities:* Signs of dwarfism, club-foot, club-hand, unequal development of the hand, supernumerary hand, unequal development of the fingers and toes.

(7) *Genitalia:* Cryptorchia, epispadias, hypospadias or hermaphrodism, uterus infantilis, uterus bicornis, phimosis or lengthening and hypertrophy of the fore-skin.

(8) *Hair:* Sparsity or occurrence of hair in abnormal locations.

After this follows the examination of the higher sensory organs, the eye and ear, for which the ophthalmoscope and otoscope render important aid.

Sensibility: Hyperæsthesias, anæsthesias, and paræsthesias, neuralgias, reactions to the æsthesiometer needle, electrical current, heat and cold.

Cutaneous and deep reflexes.

Motor functions: Facial innervation, mydriasis, myosis, unevenness of the pupils, reaction of the iris to atropin or cocain, nystagmus, strabismus, paralysis of the eye muscles, ptosis, speech, aphasia, ataxia, glossoplegia, tremor, paresis, disturbances of sphincters, catalepsy, and muscular contractions.

Secretory functions: Salivation, excessive sweating, unilateral or general. Examination of urine.

Trophic disturbances of the skin: Perforating ulcers, etc.

Testing the Mental State.—The method of examination of the mental faculties that should be employed in whole or in part as soon as the patient enters the hospital will now be described. In a private household it is often impossible to con-

duct an examination which is thorough and satisfactory, and even in institutions the method employed must be frequently modified to meet the exigencies of the case.

As soon as the patient is brought to the hospital he should at once be taken in charge by one of the resident physicians, and as complete a record as possible of all objective symptoms should be made within an hour or two after his admission. Unfortunately, a failure to appreciate the necessity of recording the symptoms as they arise often leaves us with a report that the patient was in too excited a condition to be examined, and as a consequence no notes are made upon the case until the individual has become somewhat accustomed to his surroundings and has quieted down. When such a course is followed many valuable details may be overlooked and forgotten, and it must be insisted that in many instances the manner in which the individual reacts to his new environment—especially the presence or absence of any attempt to try to adjust his conduct so as to meet the new conditions—is of vital importance. To facilitate the description of the examination the patients will be divided into two main classes,—(*A*) those who can not or will not respond to questions; (*B*) those who are able and willing to do so.

(*A*) In dream-like and stuporous states the examiner should make an accurate record of the effect produced by external stimulation. Although consciousness may be so dull that all evidences of mentality are absent, if the individual is pricked with a needle or touched with a hot or cold object, a visible reaction, such as a slight change of position or of the facial expression, an increase of the rapidity of the pulse or respiration, not infrequently follows.

In many instances the failure to respond to questions is due to excitement. This is true for the various manic states such as occur in alcoholism, manic-depressive insanity, dementia præcox, epilepsy, and a variety of other conditions. When such is the case the examiner should describe as accurately but as tersely as possible the general appearance and conduct of the individual. The effects of external stimulation should be

noted: whether it tends or does not tend to increase the excitement, or whether the patient is so absorbed in his own acts and thoughts that he is utterly oblivious to his surroundings. Not infrequently at first sight an individual fails to respond to external stimuli, and yet on a more careful examination it will be noticed that when he is spoken to or stimulated in any way there is an increase in the excitement, although there may be no evidence of distractibility. In such instances the individual, if he be talking or shouting, when addressed only talks and shouts the louder, and the intensity of the general motor restlessness is increased. In some stages of catatonic excitement, however, although the individual may be exceedingly uproarious and boisterous, external stimulation seems to have little, if any, effect in increasing the intensity of the reactions. In noting the general appearance and character of the actions it is very important to determine whether there is any correspondence between the ideas which flash through the patient's mind and the visible facial, gestural, or postural reactions. Thus, in an individual who is aggressive, uproarious, or furious, does the facial expression or what the patient says in any measure correspond with the visible reaction, or does each act seem to be the result of purely dissociated and fleeting impulses? In this, as in all other descriptions, the use of technical terms should be scrupulously avoided in the main text, although they may be retained as marginal notes or in a summary of a detailed description.

If the individual is able to utter intelligent sounds, the character of the speech should be carefully noted: (*a*) Its neurological features. Is there a tendency towards the slurring of syllables, any dropping of words or scanning? (*b*) The content of what is said may either be taken down in shorthand by a stenographer or, better yet, by means of a large phonograph, from which transcription can be made later. In some instances, however, the excitement of the individual is so great that by neither method is it possible to get a full report of what is said. If the speech is incoherent, particular attention should be paid to the expressions used, to determine (1) whether cer-

tain words or syllables are constantly repeated (stereotyped iteration); (2) whether the patient uses a great variety of new words (neologismus) or whether there is an evident inclination to resort to diminutives, doubling of the words, onomatopoietic expressions and disfigurement of speech.[2] Sometimes when the stereotypy of speech is marked many words begin with a prolonged hissing sound, as if the patient were about to stammer, and the word is then pronounced with a marked explosiveness. (3) Notes should be made upon the apparent relation of the words used to the ideas expressed. Patients afflicted with dementia præcox will frequently give utterance to several sentences grammatically formed and logically expressed, and then several words which bear no reference to what has preceded are suddenly interjected. The rhetoric should be described, especially if the patient has any tendency to express himself in a bombastic or egotistical manner. In excited patients it is important to determine whether the flight of ideas (Ideenflucht, Fuite des idées) is present, in which case the association of ideas is clearly merely superficial, indicating that the patient has little selective or critical power left, and the flow of words has no definite end in view, being merely the result of hap-hazard impulses due to internal or external stimulation. The words used apparently suggest sound associations or alliterations, and when the true manic condition exists the ideas expressed indicate exhilaration and exaltation.

As regards the content of what is said, it is important to note (1) whether there is any suggestion made as to the existence of hallucinations or insane ideas; (2) any tendency to confabulate or indulge in pseudoreminiscences (pseudologia fantastica).

It is further important to determine whether the logorrhœa is affected by external sensory stimuli or whether it is merely the product of ideas which keep flashing through the patient's mind. In the former case it will be noted that sensory

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[2] Sante de Sanctis. Intorno alla psicopatologia dei neologismi. Annali di nevrologia, xx. p. 396.

impressions, visual, auditory, or others, immediately deflect or disturb the patient's attention. When the excitement is greatest this effect may only be manifested by an increase in the intensity of the speech reaction without any deviation in the flow of ideas. In other cases, however, the effect of the incident visual and auditory stimuli becomes at once apparent, since the patient refers directly or indirectly to what has been heard or seen. In many instances the attention is so riveted upon the delusions or hallucinations of which he is the subject that the patient is unable to respond to questions. In many cases the effects that these phenomena have are immediately reflected in the physiognomy or general action of the patient. Hence an accurate description of the facial expression is of great importance. Is the individual sad, depressed, and, if so, is it shown by the wrinkling of the forehead, the glassy appearance of the eyes, the absence of tears, the drooping of the corners of the mouth? Or if anxiety, apprehensiveness, mistrust or actual suspicion, listlessness and apathy, exhilaration and exaltation, pride or arrogance, are present, what objective expressions of these are reflected in the facial reactions or general attitude of the individual? In addition to the physiognomy and actions of the patient attention should be paid to the character of his dress or toilet, both of which frequently throw some light upon the mental state, the maniacal patient frequently exhibiting a tendency to deck himself in gaudy colors, to exhibit theatrical mannerisms and eccentricities in dress, whereas other individuals are unmindful and neglectful of their personal attire as well as their individual needs. The mannerisms of the individual are important, and any tendency towards the repetition of stereotyped movements or phrases should at once be noted. If the patient shows a tendency to strike dramatic attitudes or to pose, the attempt should at once be made to ascertain whether there is a definite motive in consciousness for such an act, or whether it is merely the result of chance impulse or stereotyped repetitions.

The occurrence of negativism is an important symptom. When well marked it may be easily recognized, but it is often

very difficult to positively affirm that the individual is negativistic and not actuated by the presence of fallacious sense perceptions or insane ideas. The negativistic patient does just the opposite of what a rational individual would do under the same circumstances. The appearance of an emotional storm would indicate that the conduct is actuated by the appearance in consciousness of some idea and that the case is not one of pure negativism. In extreme cases the patient refuses food, and any form of external stimulation seems to start up reflexly this silly, unmotived resistance. Patients in this condition seldom, if ever, speak, or their speech is monosyllabic or limited to a few disconnected words. If an attempt is made to flex or extend a limb, to turn the head or open the eyes, the patient at once becomes resistive. Where the symptoms are not so intense, it will be noticed that a request to raise an arm or a leg or to close one eye may result in some movement, but generally not the one asked for (parapraxia). The so-called flexibilitas cerea is seen in a variety of conditions.

If *automatism* is present, when passive movements are made as soon as the examiner relaxes his hold of the patient's limb the movements are continued automatically. To be distinguished from *simple automatism* is *command automatism*, in which a patient is compelled to execute unpleasant or unwelcome movements or is prevented from making normal defensive movements when variously threatened. This condition is probably the result of a paresis of volition occurring largely in catatonics. These conditions are frequently noted in catatonic as well as in hypnotic dream states. The general appearance of patients who are in this cataleptic condition is more or less characteristic and should be described. The face is expressionless, the eyes have a vacant stare. Mutism exists and the volitional movements are reduced to a minimum. The tendency for movements, when once initiated, to persevere may be noted in cases of catatonia. If the patient is asked to touch the tip of his nose with the finger, several seconds may elapse before the request is complied with, but when the movement has once been begun it continues whenever the patient is stimu-

lated, no matter if a totally different request has been made. The stereotyped automatic movements of the catatonic individual are highly characteristic and essentially different from those of the patients who are actuated by definite ideas. Some catatonic patients will never enter a room without walking along one line in the carpet, or will sit and play solitaire by the hour in an automatic way, making the same mistakes and always going through the same movements. The mannerisms are particularly noticeable when such individuals feed themselves or make the attempt to dress. Some patients will sit by the hour turning their heads from side to side in a rhythmic, stereotyped manner. Even the movements of respiration seem to be affected, and at intervals of a few seconds the patient will take a long breath followed by sighing expiration. Sometimes echopraxia corresponding with echolalia occurs.

(*B*) When the individual is both able and willing to reply to questions, after the objective symptoms which are apparent on superficial examination have been noted, a more detailed examination of the mental condition is made. The manner in which the patient replies to questions should be described. In the first place, a considerable interval may elapse from the time the question is put before any visible reaction signifies that the sense of the interrogation has been apprehended. Such a delay frequently occurs in states of depression, whereas in excitement the reply is given with lightning-like rapidity. Sometimes, however, although the sense of the question seems to be quickly apprehended, there may still be a pause—the result of delayed reaction or psychomotor retardation. If the patient is under the influence of an hallucination or an insane idea, the delay may be purposeful. In many instances the patient must be very carefully studied and all the evidence carefully weighed before it is possible to determine with which one of the two conditions we are dealing. The content of what is said should be recorded as carefully as possible, and we should note whether or not the patient has a tendency to be garrulous, to enter into great detail in all his statements (circumstantiality), and whether or not any marked degree of irrelevancy is present.

The emotional state, as reflected in the facial expression as well as in other reactions, may be an important feature in the case. The examiner should describe the facial expression, whether it is apathetic, depressed, elated, etc., and then an attempt should be made to determine if the visible reactions are or are not in accord with the idea that occupies the patient's field of consciousness. In stages of manic excitement the patient may be angry, depressed, or joyful, and at once gives evidence of what is passing before his mind. But it is eminently characteristic of certain conditions that a marked dissociation between the idea (noöpsyche) and the visible reaction (thymopsyche) exists.

Many of the psychological tests suggested are too complicated to be of value in the clinic. As a rule, we begin with a note upon the patient's attention. Is it easily gained and, if so, is it well maintained, or does it easily lapse and is there a great degree of distractibility? If distractibility is present, it is well to note whether it is produced by all incident stimuli or only follows certain kinds. A very good simple clinical test for the attention of educated individuals is the so-called "one-hundred test." The individual who is being examined is asked to subtract six or seven from one hundred and to continue the subtraction down to zero. Evidences of mental fatigue and distractibility can often be easily demonstrated by this simple method. The functions of associative memory should then be tested. This includes the power of picking up and retaining impressions and the faculty of re-collecting and redeveloping memory pictures referring to a more remote period in the past. An excellent idea of the power of associative memory is obtained by asking the patient to give an account of his present illness and of the events in his past life which have any bearing upon the condition. The tendency to indulge in pseudoreminiscences or to confabulate may become noticeable. In many cases, although there is no positive defect in memory, a note should be made as to whether the patient does or does not complain of a subjective defect in recollection. In connection with memory it is important to note whether the orientation of the patient is impaired either in its spatial or time relations. Such

defects, as a rule, quickly become apparent when the individual is asked a number of simple questions. How long have you been in the hospital? How long have you been ill? Where is the hospital situated? Where is your home? Closely associated with the sense of orientation is the so-called sense of recognition, disturbances of which are not infrequently noted. These may be transitory, as in conditions of neurasthenia and epilepsy, or may be more permanent and occur in the states of excitement in certain psychoses. The disorientation of the patient may still further be conditioned by the occurrence of either hallucinations or insane ideas and affect either the somatopsychic, autopsychic, or allopsychic field of consciousness.

The power of the individual to associate ideas may be tested, either in reply to questions or by his voluntary conversation as well as by the writing obtained. Simple tests may also be used, such a one, for example, as that proposed by Fuhrmann. One hundred test words are printed on a slip and the patient is told, as soon as a word is called off to him, to describe the quality of the object named. The length of time that elapses between the calling off of the word and the reply is noted. In intelligent individuals it is estimated that from 95 to 100 per cent. of the associations are correctly given. But when there is a marked diminution in the intelligence or when the reactions are greatly impaired the number falls below 70 per cent.; and when it is as low as 60 per cent. there can be no doubt that a pathological condition exists. The quickness of the reaction may be tested in a variety of different ways, by the chronoscope, for instance, although for all practical purposes the various forms of apparatus, all of which are more or less complicated, have little advantage over the simpler clinical tests.

The examiner should attempt to ascertain whether the disturbances of the association are merely of a negative character or due to the cropping up in consciousness of autochthonous ideas which are recognized by the individual as having developed in some strange and unaccountable fashion. In ideas of reference the individual often attributes to his own

words or actions as well as to those of others an exaggerated importance and tries to establish a relationship which does not really exist. In dominant ideas the imperious character of the idea overriding all other processes of association is a most marked feature.

The examination in regard to the occurrence of hallucinations or illusions is frequently beset with many difficulties, particularly as many patients are extremely sensitive and refuse to admit their occurrence. Not uncommonly the examiner by watching the actions of the patient may be led to infer that definite hallucinations occur, and if such is the case, it is important to determine their nature: whether they are primary or secondary in character and whether they seem to bear any relation to defects in the sensory apparatus; whether their subjectivity is marked and whether they are stable or mobile, unilateral or bilateral. For the points to be noted in connection with insane ideas and the other phenomena of alienation the reader is referred to Chapter III.

Examination of the Cerebrospinal Fluid.—A complete examination of the cerebrospinal fluid includes a determination of the character of the cellular and bacterial elements present as well as of the physical and chemical qualities. Numerous methods have been suggested for obtaining specimens, and inasmuch as so many varying factors must be taken into account in the examination of the fluid, it is essential that no precautions should be omitted to prevent the occurrence of discrepancies in the results of the observation. Recently Meyer[1] has redirected attention to the necessity not only of carrying out the procedure with the strictest aseptic precautions, but also of observing certain rules in the examination of the fluid after its withdrawal. He recommends the technique employed by Sicard.[2] At least 3 or 4 centimetres of the spinal fluid are drawn off into a sterile tube and at once centrifugalized.

[1] Meyer, Ernst: Ueber Cytodiagnostik. Untersuchung des Liquor Cerebrospinalis. Berl. klin. Wochenschr., 1904, Feb. 1, Nr. 5, S. 105.

[2] Sicard and Monod: Examen histologique du liquide céphalo-rachidien dans les meningo-myélites. Bull. de la soc. méd. des Hôp., 1901.

The French writers prefer to employ a centrifuge capable of making 3000 revolutions and the process is completed in ten minutes, but when the rotation is slower (2500 to the minute) at least half an hour is necessary. The technique has been described in detail by Nissl.[5] After centrifugation is completed the fluid is carefully poured off into a reagent glass. A glass pipette is then introduced into the tube so as not to touch the sides and the substances on the bottom are carefully sucked up. The contents of the pipette are then blown out again so that a better mixture of all the elements may be obtained. The second time the contents of the pipette are carefully blown out on to three glass slides, care being taken that the drops be equal in size. The slides after being allowed to dry in the air are brought for half an hour into equal parts of absolute alcohol and ether. For staining Unna's polychrome methylene-blue solution is used, a few drops being allowed to remain on the specimen for ten minutes, being then washed off with distilled water; the slides are then passed through alcohol and xylol, and the specimen is mounted in balsam with a thin cover-glass. Ravaut[6] differentiates between a decided reaction (*grosse réaction*) when from 20 to 150 cell elements are found in the field of the oil immersion, a moderate reaction (*réaction moyenne*) when from 7 to 20, a suggestive reaction (*réaction discrète*) when from 4 to 6, and a negative reaction (*réaction nulle*) when only 2 or 3 lymphocytes occur in each field. According to Sicard, with a Leitz objective No. 7, giving a magnification of from 300 to 400 times, the presence of 3 or 4 lymphocytes in the field may be regarded as normal. In some pathological cases, however, a great increase in their number is observed. In many instances the cells having a pale-blue nucleus somewhat larger than that of the lymphocyte, with granular masses in the body and showing a tendency to stain a reddish tinge, are noted. Morphologically these elements re-

[5] Die Bedeutung der Lumbalpunktion für die Psychiatrie. *Centralbl. f. Nervenheilk. u. Psych.*, April, 1904.

[6] Le Liquide céphalorachidien des syphilitiques en période secondaire. *Annales de Dermatologie et de Syphiligraphie*, 4 série, tome iv, p. 537.

semble mast-cells, and Meyer is inclined to regard them as small mononuclear leucocytes. A lymphocytosis of varying degrees has been noted in dementia paralytica, tabes, tuberculous meningitis, chronic alcoholism, and in all diseases in which there is an involvement of the meninges. In some of Nissl's cases polynuclear leucocytes were seen, but their significance is not clear. It is important to note that the cellular elements in the spinal fluid vary considerably, and that at the first and second puncture it may be impossible to demonstrate the presence of lymphocytes, whereas on a third occasion a number of cells may be found. The procedure is indicated in all doubtful cases, especially when it is necessary to differentiate between functional and organic disorders, although the exact significance of the findings cannot as yet be clearly defined.

For the estimation of the pressure of the spinal fluid many methods of procedure have been employed, but the results so far obtained do not permit of the formation of a definite opinion. Considerable differences have been frequently noted depending upon whether the patient occupies the recumbent or the sitting posture. At present very little is known regarding the secretion or circulation of the spinal fluid. As regards the importance of the results to be obtained from chemical analyses opinions vary widely. Thus Schaeffer holds that the increase of albuminous constituents, so frequently noted, is directly due to inflammatory changes in the meninges and not, as others believe, the result of similar changes in the nervous system in other parts of the body. For a detailed account of the results of the chemical analyses the reader is referred to the work of Guillain and Parant[7] as well as that of Coriat.[8]

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[7] Sur la présence d'albumines coagulables par la chaleur dans le liquide céphalorachidien des paralytiques généraux. Revue Neurologique, No. 5, 30 Avril, 1903.

[8] The Chemical Findings in the Cerebrospinal Fluid and Central Nervous System in Various Mental Diseases. The American Journ. of Insanity, 1904, vol. lx, No. 2.

CHAPTER V

THE TREATMENT OF CASES OF ALIENATION[1]

During the nineteenth century marvellous changes took place in the methods of caring for and treating cases of alienation. The removal of the insane from dungeons, through the exertions of Pinel, marked the beginning of a new epoch in psychiatry; but no less important was the second era, heralded by the introduction into psychiatry of modern clinical methods and the establishment on the Continent of Europe, particularly in Germany, of fully equipped hospitals for the insane closely affiliated with the universities. In the older institutions the dominant idea in the plan of organization had regard merely to the detention of the patients, and it is in this respect that the modern hospital for the insane shows a radical divergence. Within the last thirty years as remarkable a change has taken place in the treatment of the insane as in the improvement of surgical methods. Unfortunately, in institutions in the United States, with few exceptions, the detention character is still primary, and opportunities for successfully treating patients are still few and incomplete, inasmuch as the existing organization and imperfect equipment do not make it possible to give them the benefit of the best medical skill. Nor will this defect be remedied until we in this country have learned to appreciate that proficiency in psychiatry can be obtained only in institutions in which the interest of the alienist in his profession is kept alive by abundant facilities for study and his energy is stimulated by the presence of students for whose training he is responsible. The establishment of psychiatrical hospitals in close proximity to other university clinics affords the only possible solution of the fundamental problems with which we are now confronted.

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[1] A System of Physiologic Therapeutics, vol. viii—Rest; Mental Therapeutics—Suggestion, by Francis X. Dercum. Phila., 1903. Gaupp, A.: Die Behandlung Geisteskranker. Stuttgart, 1903.

Among the manifold advantages to be obtained in this way two are deserving of special mention here: (1) only in this way can we command a supply of alienists thoroughly competent to practise and teach their specialty; (2) only when every medical student is given the opportunity under competent supervision to observe and become acquainted with the various clinical phases of insanity can we hope that the general practitioner will finally become sufficiently educated along these lines to recognize the development of alienation in its earliest stages,—the period when the best results may be hoped for in combating the ravages of this scourge. There is no branch of medicine in which the ounce of prevention is of greater value. Many cases which now become hopelessly chronic, if the diagnosis were made earlier in the disease and the proper conditions for treating the patient were provided, might readily be cured.

Prophylactic Measures.—In the section devoted to the discussion of the etiology of insanity sufficient has been said to indicate what measures may be instituted to prevent the spread of alienation. Although various factors concerned in the transmission of normal or abnormal mental qualities are still very imperfectly understood, common-sense and experience justify us in maintaining that in the vast majority of cases it is better that individuals who have shown signs of mental aberration should not marry. Hence it follows that one of the most important reasons for making ample provision in every community for the care of the insane is to deprive individuals who are bereft of reason of the opportunity to propagate their kind. The actual encouragement sometimes given by physicians to those who are physically and mentally unfit to marry and the public indifference to the necessity of restraining epileptics and those who are mentally defective from having children are a serious menace to society. Only those who are familiar with the conditions that prevail in the higher as well as in the lower classes fully realize the important sociologic bearing of this problem. As has been pointed out, many of the vagabonds and tramps who are prone to indulge their sexual impulses pro-

miscuously are subject to various forms of alienation, it having been estimated that in Germany at least 15 per cent. of this class were insane.[2] But although it is desirable for the good of the community that only individuals who are mentally sound should propagate their kind, it is scarcely to be expected that the passage of laws similar to the one enacted in Minnesota will to any degree regulate or do away with the possibility of marriages among those who are mentally defective. Hence we are left with only two methods by which these dangers can be met, —namely, ample provision for these poor unfortunates in institutions or, if they be left at large, castration.

Whenever an individual presents symptoms that in any way suggest the possible outbreak of an attack of alienation which might be fraught with danger to himself or the community, he should immediately be kept under constant observation until the physician has been able to establish at least a tentative diagnosis; but this can be satisfactorily and quickly accomplished only in cities where reception hospitals have been established. In communities where such institutions do not exist, it remains for us to do the next best thing, and at once remove him to an asylum, where he can be under constant observation until further developments occur. Not only is this step necessary to prevent any disastrous results to others, but it is the one which will best serve the interests of the patient. In properly constructed and fully equipped hospitals for the insane even the milder cases of alienation have a far better chance for a rapid recovery, and experience has shown that mental depression always tends to deepen and excitement to be exaggerated when the patient is surrounded by individuals or by objects with which he has been familiar. Unfortunately, a misguided sense of kindness and the fear of damaging the reputation of a respectable family often lead to a temporizing policy, and the patient is kept at home until all hope of recovery has vanished, while in the end the family in no wise escapes the

[2] Wilmanns, Karl: Die Psychosen der Landstreicher. Centralbl. f. Nervenheilk. u. Psych., 1902. Bd. xii, xxv. Jahrgang.

terrible slur. Against such sentimentality the physician who understands anything about insanity and who has the real interest of his client at heart will sternly set his face. Not but what we must confess that the prejudices which we have to overcome are not wholly unjustifiable, inasmuch as the majority of institutions in the United States are poorly adapted to care for the incipient and curable types of alienation. And although we may be convinced that even an imperfect institution can offer better results than the home in the majority of these cases, we should never rest until the public has been convinced that the best will in the end prove not only to be the most humane, but also the most economical.

As soon as the patient is within the hospital, if the symptoms are acute or subacute in character, the bed treatment should at once be instituted. This rule applies also to the acute exacerbations occurring during the course of a chronic psychosis. This method of treatment, to be successful, necessitates all the adjuncts of the modern hospital,—trained nurses, facilities for bathing and other hydrotherapeutic measures, massage, electricity, diet, etc.,—and the apparent lack of success derived from it must often be attributed to the fact that it is attempted in institutions that are in the transition period between the asylum and the hospital and therefore are ill adapted to carry out all the various procedures necessary. The means used to quiet excited patients next demand consideration. In the modern hospital for the insane the strait-jacket and camisole, except in very rare cases, "belong in the garret," and the frequent resort to these mechanical forms of restraint is an indication of the existence of two pernicious conditions: (1) a lack of proper bathing facilities; (2) an insufficient number of nurses. In institutions which are not properly equipped for the carrying out of hydrotherapy mechanical restraint often becomes a necessity. The sheet or camisole may then be employed with considerable advantage to the sufferer, as nearly every insane patient soon realizes that it is useless to attempt to free himself and get out of bed. On the other hand, if the excited patient is simply allowed to go on struggling

with two or even three nurses, violent motor restlessness may be kept up uninterruptedly for hours until both patient and nurses are utterly exhausted.

The importance of the continuous rest in bed for patients suffering from acute or subacute forms of alienation can hardly be overestimated. This measure, however, cannot be successfully carried out without the aid of physicians and nurses who have been specially trained not only in the care of the insane, but also in the wards of a general hospital, and have a thorough practical knowledge of the details of the so-called rest-cure. In the first place, unless the patient is carefully tended by a skilful nurse, bed-sores are apt to develop. This complication can be obviated by bathing, strict attention to cleanliness, the removal of all possible sources of pressure, by change of position, and by immediate attention to small excoriations as soon as they appear. In nearly all instances the monotony may be broken by the institution of various hydrotherapeutic measures.

No definite time can be dogmatically prescribed during which the patient should be kept in bed. The physician's common-sense and experience must be the guide in all such matters. As a rule, patients who have lost weight and are anæmic should be kept in bed until they have shown a very decided improvement in their general condition. In the milder cases it is sufficient to keep the patient in bed for a week or ten days; whereas in the severer cases two or three months are necessary in order to derive the most satisfactory results from the treatment. When the proper time comes the bed treatment may be gradually broken by short periods during which the patient is allowed to sit up. Gradually various forms of exercise, such as are referred to later, may be introduced. For a more detailed description of the rest cure the reader is referred to the publications of Weir Mitchell, which created a new epoch in the treatment of nervous and mental diseases, as well as to Dercum's excellent account of the methods.[1] Under no circumstances should the

[1] A System of Physiologic Therapeutics, Vol. viii. Edited by Solis Cohen. Phila., 1903.

patient be kept continuously in bed unless he can be under the constant supervision of a well-trained nurse. The monotony of the rest in bed should be relieved by baths, packs, massage, passive or active movements, and in the milder cases or during the periods of convalescence by the nurse reading aloud or occupying the patient's attention by some pleasant and not too stimulating form of mental occupation.

Hydrotherapy.[4]—The good effects to be derived from appropriate hydrotherapeutic measures in the treatment of cases of alienation are becoming more and more appreciated every day. Among the more important of these procedures is the warm bath. The water should be at a temperature of from 34° to 36° C. The tub should be placed in a room in the isolating ward especially prepared for the purpose, or a portable tub which can be moved about from one room to another may be employed. There should be sufficient water in it to afford a considerable degree of buoyancy, so that there is little, if any, pressure upon the various parts of the body and limbs. If necessary, one or more rubber air-cushions may be introduced to help to sustain the weight. A canvas sheet may be stretched over the tub, great care being taken in cases of excitement or of marked mental depression that the patient shall have no chance of strangling himself by means of the edge of the sheet. Ingress and egress of the water supply for the portable tubs may be secured by means of a long hose carried to the nearest bath-room. As a rule, the first bath should last from fifteen minutes to one hour. In many cases this will be sufficient to lessen motor restlessness and to exert a beneficial reflex influence upon the states of anxiety, but the submersion may be prolonged for several hours or the patient kept continuously in the tub for one or more days. Many excited patients become quickly accustomed to the water and after a few minutes do not offer any objection to the continuance of the bath. In each case it is

[4] Ueber die Anwendung der physikalischen Heilmethoden bei Nervenkrankh. in der Praxis. Hoffman, 1898. Hydrotherapy. A System of Physiologic Therapeutics. Phila., 1903.

better that a physician should be present while the first bath is being given in order that the effects upon the mental and physical state of the patient may be carefully noted. After the patient is taken from the tub he should be carefully dried and put to bed, and in the majority of acute cases kept there until the next bath is given. When for various reasons it is impossible or inadvisable on account of a weak heart, cerebral hemorrhage, etc., to give a tub-bath, warm packs may be tried. This procedure is carried out as follows: A rubber blanket having been placed under the patient, he is wrapped in a warm wet sheet and then covered over with a woollen blanket. At intervals the blanket is removed for a few moments and the sheet moistened with warm water. This method of treatment will often be found to be very beneficial in cases of acute alcoholic delirium as well as the mild forms of insomnia and hypomaniacal states. Sometimes it is advisable to give only one tub-bath in the twenty-four hours and supplement this with warm packs every four or six hours. Cold baths and cold packs, as a rule, are of no service or even may be very deleterious in states of excitement, but later may be used with considerable advantage in hypochondriacs and mild states of depression. The prolonged warm baths are particularly useful in the excited stage of paresis as well as in that of manic-depressive insanity, collapse delirium, amentia, and Korsakow's syndrome. Alter has given an interesting account of the beneficial effects of baths in the treatment of protracted cases of maniacal excitement as compared with those obtained from the use of drugs.[1] It can not be denied that any properly conducted hydrotherapeutic *régime* makes very considerable demands upon the time and energies of the nurses and attendants, but so far as its value in the treatment of various mental conditions is concerned experience has shown that from its employment many patients will derive benefits which it has not been found possible to obtain by any other means at our disposal.

[1] Alter, W.: Versuche mit zellenloser Behandlung und hydrotherapeutischen Massnahmen. Centralbl. f. Nervenheilk. u. Psych., 1900, März, N. F., Bd. xv, xxv. Jahrgang.

Massage is a very important adjunct in the treatment of certain forms of alienation, such as psychasthenia, neurasthenia, hysteria, the milder stages of manic-depressive insanity, particularly the period of depression, and during convalescence from all the more acute psychoses. Not only is it indicated during periods of mental depression, but it often proves distinctly beneficial in certain of the very mild maniacal states. Instead of forcing patients who are mentally depressed to exert themselves or to expend any little energy they may have accumulated in getting out of bed and taking walks, it is far better that they should be kept flat on their backs and exercise administered to them in the form of massage or passive movements. This may be given once or twice a day according to the indications in the particular case. The reactions of patients vary considerably, and sometimes it is found desirable to give the massage in the morning, at other times at night, while many patients can take it twice a day, morning and night, with benefit. In any case the degree of force used and the duration of each treatment depend very largely upon the condition of the patient.

Various *gymnastic exercises* in the form of the so-called German or Swedish movements can often be employed with great benefit. The former are generally a variety of simple active movements somewhat similar to those frequently taught in the schools. In some cases the patients may be allowed to hold in their hands sticks or light dumb-bells while carrying out the exercises. The latter are a variety of more complicated movements, a description of which will be found in special hand-books. Many of these forms of exercise are indicated when the patient is up and about the wards, and some of the milder forms may be tried while he is still in bed. They are particularly valuable when the individual is just entering upon the stage of convalescence and when it is desirable that only a certain amount of physical exercise should be taken without materially increasing his sense of effort. Under supervision the patient is allowed to execute a number of movements, such as raising and elevating the arms or legs, care being taken

not to overtax his strength. In this way many of the muscles are brought into play before the time comes at which walking should be attempted. V. Bechterew[4] for several years has successfully carried out this practice of having patients who were feeble or who were afflicted with various forms of paralyses taught to execute a series of movements while in the full-bath. In some instances where the active movements can not be successfully carried out, the nurse or attendant may use the various passive movements. Such practices are of great use not only for the physical effect that they have upon the patient in stimulating the circulation, but also for the influence exerted upon the mental condition, since they aid in distracting the patient's attention from himself and in keeping his mind more or less occupied. As an adjunct to the means already indicated a plentiful supply of fresh air is all-important. Nothing can be worse for patients than the temperature of the wards through which one frequently has to pass, particularly in the institutions where steam heat is employed. In fact, in not a few of our insane asylums not only the patients themselves, but the attendants and members of the medical staff, have been known to suffer severely from the close, impure, and overheated atmosphere in which they have to spend so large a portion of their time. For a certain part of every day, particularly when the sun is shining, even in cold weather, bed patients should be well protected with a sufficiency of coverings and two or three times a day the windows in the ward should be opened wide for several minutes. Patients suffering from mental depression, when the motor restlessness is not marked,—or, in fact, in a variety of other conditions where there is little or no excitement,—may be wheeled out-of-doors in bed and left there under the supervision of an attendant for several hours. It is much to be regretted that whereas the facilities for such treatment exists in some of our general medical hospitals, they are for the most part lacking in the institutions to which acute

[4] Heilgymnastiche Behandlung im Bade. Centralbl. f. Nervenheilk. u. Psych., März 15, 1904.

mental cases are consigned. Nothing can be more strongly condemned than the practice of allowing anæmic, sallow-looking patients to remain seated in their rooms or in the corridors for hours at a time without a breath of fresh air, whereas, if proper provision were made, even when in bed, they might be kept practically out-of-doors, and when able could be kept occupied by massage, gymnastics, and the amusements indicated in each individual case. In every institution for the insane, before it becomes worthy to be called a hospital, in addition to a corps of thoroughly trained nurses there should be ample facilities for carrying out the rest-cure and hydrotherapy in all its details. Moreover, certain of the attendants should be skilled in giving massage, and there should be at least one capable of giving instruction to the patients, under the direction of the physician, in various gymnastic exercises. The apparatus employed need not be elaborate and the exercises could be carried out in some airy, cheerful room set apart for that purpose, where a few patients could be taken at one time. As has been said, for acute conditions a complete or some modified form of the rest-cure is generally indicated, but not a few patients, particularly those afflicted with dementia præcox, seem to be greatly benefited by more or less severe exercise in the open air.

Mental Treatment.—Not so very long ago many articles were published dealing with what was termed the "mental treatment" of different forms of alienation. Undoubtedly many insane patients are particularly susceptible to suggestion, and we have already pointed out that much of the benefit to be derived from massage, hydrotherapy, and gymnastics is largely due to the fact that the patient's attention is diverted by what is being done for him, and in this way his mind is stimulated gradually to more normal action. Undoubtedly a few cases of alienation, particularly certain hysterical states, are temporarily improved by an artificially obtained hypnotism, but that permanent beneficial results are ever brought about by this form of treatment is highly improbable, and the general consensus of opinion is against its employment in institutions.

The attitude of the alienist towards his patients is very important. He should always tell them the truth and should convince them that his conduct towards them is always straightforward. If the physician is once found to have practised any form of deception, no matter how excellent the motive, the patient will never regain the confidence in him which is absolutely necessary for the accomplishment of any good results. The higher the intellectual state of the patient previous to the attack of alienation, the more necessary does it become that the medical attendant should be interested even to the point of enthusiasm in all that pertains to his profession. Practical experience has shown that many of the more intelligent patients are quick to note the mental inertia and lack of scientific interest on the part of medical officers of hospitals for the insane. During convalescence the patient should be very carefully watched by the nurses and physicians in order that the first signs of a relapse may be detected and met by proper treatment. Only exceptionally should he be permitted to see members of his own family or friends, as such interviews are frequently followed by a renewal of the symptoms. The physical condition should be carefully noted, and in all hospitals regular charts of the bodily weight should be kept in such a manner that they may be readily consulted by the physician on his daily rounds. In manic-depressive insanity, or the acute psychoses more particularly, the rise or fall in bodily weight is of very great significance in the prognosis.

A few more specific suggestions regarding the treatment of cases of acute or subacute excitement as well as of depression may not be out of place here. When individuals are maniacal it is nothing less than inhuman to merely confine them in a single room about which they are allowed to roam like wild animals. They should be kept either in bed or in the prolonged bath. The latter may be given immediately upon admission, if the patient is not too excited or in too exhausted a condition. In all forms of excitement the patients are frequently constipated—a condition that may be relieved by the administration of various remedies, preferably calomel, castor oil, or croton oil

given by the mouth. Unless some contraindication exists, the bowels should be moved as soon as the patient comes to the hospital. Steps should also be taken against too long a retention of the urine. When the water is not passed at the proper intervals, warm wet cloths should be applied over the region of the bladder, or warm sitz-baths should be tried. Sometimes the urine may be gently expressed from the bladder by means of an abdominal manipulation similar to that employed in the removal of the placenta. On account of the danger of septic infection catheterization should be employed only as a last resort. If instrumental relief becomes necessary, the strictest aseptic precautions should always be taken, and if it becomes necessary to frequently repeat the operation, urotropin, 0.5 gramme two or three times a day, or from three to ten drops of turpentine may be given.[1]

Isolation is indicated not only in cases of acute excitement, but also in profound mental depression. Nothing is more unfortunate than the method of treatment of mental depression so often adopted in our institutions, which allows the patients during the periods of deepest depression to associate with other insane individuals, and instead of keeping them in bed often compels them to get up and walk about the wards. This is quite analogous to the treatment of such cases so often prescribed through ignorance by the general practitioner, who advises patients afflicted with mental depression to travel. On the contrary, all such patients should be isolated and kept in bed, and they should be seen only by the physician and nurses and not allowed to interview members of their family. In many of the French hospitals hysterical and other excited patients frequently have their beds completely surrounded by a canopy or tent formed of sheets supported by an iron framework. The patient is permitted to raise the sheet only upon the approach of the physician or nurse, and in this way can be kept completely isolated for days at a time. Intelligent patients who

[1] Pfister, H.: Die Anwendung von Beruhigungsmittele bei Geisteskranken. Halle a/S., 1903.

have passed through periods of severe mental depression during convalescence frequently complain that nothing intensified their suffering so much as to be urged to occupy themselves or to be driven to try and divert their attention from their own troubles, or in any way to contrast their condition with that of people about them. In fact, they feel that to expend what little energy they may have possessed in trying to respond to external stimuli could only result in harm. Thus, for example, one of our patients declared that whereas the most detailed and elaborate observation of the physician in no way fatigued or annoyed him, inasmuch as it made him feel more certain that every effort was being made to restore him to health, at the same time his feelings of depression were rendered much worse by any attempt to force him to exert himself. The more acute the mental depression the more imperative the indication for perfect rest in bed.

In all forms of acute alienation the *diet* is of great importance, and in every hospital there must be a diet kitchen and an instructor thoroughly trained in the preparation of food. Until the physician becomes acquainted with a case and sees how the patient will respond to treatment a fluid diet is indicated. As a rule, about six ounces of milk every two or three hours will be sufficient; but in some rare instances where the digestive disturbances are marked very small quantities should be given every hour for a short time. If the milk is not well tolerated, eggs, bouillon, broths, gruels, the various wheat preparations, or rice may be tried. It is of great importance that patients should drink plenty of water, either plain or aerated. Even when only fluid substances are being administered it is important that several glasses of water be taken every day. In many instances the patient, particularly the sufferer from hallucinations or illusions, will refuse nourishment in all forms, but by dint of tact and kindness the nurse or attendant will often be able to overcome his objections. Whenever it can possibly be avoided, it is undesirable to arouse the antagonism of the patient by peremptory commands. In some instances where nourishment is not immediately indicated the patient may be

allowed to go for several hours, after which it will often be found that his objections have disappeared and some form of food is taken gladly. In some cases when the patient can be trusted, if the food is put within his reach and the nurse leaves the room, he will take it when he finds himself unobserved. Great caution, however, should be exercised in leaving patients alone. Either the motor restlessness or psychomotor retardation may be great enough to interfere with the taking of food. In these cases, as well as in those in which the refusal to take food is the result of some delusion, forced feeding must be resorted to. When this procedure is necessary the patient is made to sit up in bed in order to avoid regurgitation or vomiting. The instruments necessary are a soft rubber sound of about 70 centimetres in length and from .8 to 1.5 centimetres thick, similar to a Nélaton's catheter. For various reasons it is preferable that the outlet of the sound should be in the end and not in the sides, but if one with lateral openings is used care should be taken that their edges are smooth. In the majority of the excited states as well as in the stuporous cases it is impossible to introduce the sound through the mouth without the use of considerable force, which is always undesirable. In these cases the passage through one or other of the nostrils can be utilized. Only mild pressure should be used and the sound should never be rotated, as the nasal mucous membrane is delicate and can very readily be injured. As the sound passes the pharynx reflex gagging, coughing, or an excessive flow of saliva and disturbances in respiration often result. Intense reflex coughing, cyanosis, and difficult breathing usually indicate that the instrument has been passed into the trachea, and in such cases it should be at once withdrawn. If the patient be made to bend his head slightly forward, not only the flow of saliva from the mouth, but also the opening of the pharyngeal passage will be facilitated. If too great haste is not used, the reflexes become less active and permit of the further advancement of the sound. Very obstreperous patients are sometimes able to temporarily prevent the sound from passing the pharynx, in which case the instrument is withdrawn and then carefully reintroduced. When

the sound finally reaches the stomach the outer end is attached to a glass tube, which is in turn connected with the rubber inflator (Politzer bag) or Davidson's syringe. The glass tube and syringe should be filled with the fluid nourishment, so that as little air as possible may be injected into the stomach when the bulb is squeezed. As soon as the food has been introduced into the stomach the sound and glass tube are disconnected, and the former is withdrawn slowly until the end is through the pharynx, when it may be more quickly removed from the nose. In unconscious patients, if regurgitation of the fluid threatens, the tube should at once be withdrawn. When there is much tendency to vomiting after forced feeding, subcutaneous injections of morphin or the admixture of a small amount of opium with the fluid introduced through the catheter gives satisfactory results. Various forms of fluid nourishment may be administered in this way, and experience has shown that patients may be kept alive in this manner for considerable periods of time. Some such formula as the following: Milk, 750 cubic centimetres; eggs, 3; sugar, 150 grammes, may be given two or three times a day. In some instances small quantities of lemon-juice or the drugs indicated for the particular case may be mixed with the fluid. In cases of hæmophilia, hæmoptysis, weak heart, or where vomiting might prove to be a source of danger in itself, this form of feeding is contra-indicated. Nutritive enemata either alone or as an adjunct to other forms of feeding are at times of great service. These are best preceded by a rectal injection of lukewarm water to which, when necessary, glycerin or olive oil has been added. After the lower bowel is thoroughly cleansed an opium suppository may be introduced, and in fifteen minutes or half an hour later the nutritive enema.

Electrotherapy.—In the treatment of mental cases electricity is not of very great value. In the milder forms of depression, neurasthenia, or hypochondriasis, the Holz machine may be used with some benefit. Occasionally where the patient is open to suggestion temporary beneficial effects follow the use of the faradic current. The local paralyses that are relieved

by the use of galvanism are of neurological rather than psychiatrical interest.

Medicinal Therapy.—With the exception of mercury and the iodides for the amelioration of some of the milder mental disturbances dependent upon syphilis, or of quinine in cutting short the acute delirium associated with malaria, and the thyroid extract in myxœdema and cretinism, we possess no specific drugs for the treatment of alienation.

Opium may be administered in various forms to quiet excited patients or lessen pain. As a rule, it is best to begin with small doses, given three or four times a day and gradually increased if necessary. Many of the mild forms of excitement or anxiety quickly respond to this form of treatment.

Comparatively large doses of opium have been recommended by Flechsig in the treatment of mental depression. In the more chronic cases, however, great caution is necessary in order to guard against ill effects from the drug upon the gastro-intestinal tract. Morphin in the form of Magendie's solution in doses of 5 to 10 drops may be substituted for opium, especially when subcutaneous injections are employed. Great care must be taken that during the stage of convalescence the patient does not become an *habitué* of the drug.

Hyoscin is serviceable in various forms of acute excitement, although many authors object to its use when the maniacal symptoms are very marked. Where it is necessary to quiet the patient quickly, so that the transportation to the hospital may be effected at once and with as little disturbance as possible, this drug is very useful. Hyoscin may be given in combination with morphin.

Scopolamin (hydrobromate) may be administered by the mouth in doses of from one-two-hundredth to one-one-hundredth of a grain (.0003 to .0006 gramme), or hypodermically in doses of one-four-hundredth to one-two-hundredth of a grain (.00015 to .0003 gramme). In acute stormy deliriums this drug, if given with great care, is particularly useful in quieting the patients. Many authors have reported instances of delirium following the use of hyoscin and scopolamin, but

such results have not been observed at the Sheppard and Enoch Pratt Hospital.[8] As a rule, after an interval of half an hour following the administration of scopolamin the patient falls into a quiet sleep, which is occasionally preceded by a dryness in the throat, an increased sense of fatigue, and more rarely by slight disturbances in coördination of movement. If the first dose is not successful, another may be administered after one or two hours, but a third dose is not, as a rule, either indicated or necessary. This drug has been very successfully used in all forms of acute excitement, particularly the excited periods belonging to manic-depressive insanity, paresis, epilepsy, acute delirium due to alcohol or other causes, and catatonia. Sometimes the combination of scopolamin with morphin seems to exert a beneficial effect. The drug is contraindicated in the presence of any marked cardiac complication, feeble pulse, or very advanced arterio-sclerotic conditions. No cumulative effects have been noticed. Various other hypnotics are often useful; amylene hydrate in doses of from 1 to 3 cubic centimetres (15 to 45 minims), sulfonal 1 to 2 grammes (15 to 30 grains), trional 1 to 2 grammes (15 to 30 grains).

Just recently *veronal* has attracted considerable attention. A single dose of 0.5 to 1.0, or exceptionally 1.5 to 2 grammes, may be given in hot water, tea, or coffee. It is said to act within from thirty minutes to one hour. No bad after-effects have been noted except in seven cases reported by Fischer,[9] in which there was an unpleasant feeling in the head, somnolence, and in one case nausea and vomiting. Abraham,[10] who tried the drug extensively in the excited periods of dementia paralytica, was not favorably impressed with the results

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[8] Benke: Scopolaminum hydrobromicum. Monatsschr. f. Psych. u. Neurol., xiii, 1 u. 2. Van Vlerken, C. F.: Ein Delirium in Anschluss an Hyoscinmissbrauch. Centralbl. f. Nervenheilk. u. Psych., 1904, N. F. 188, Jahrg. xxvii, S. 93.

[9] Ueber die Wirkung des Veronal. Therapeut. Monatshefte, 1903, Jahrg. xvii, August 5, 393.

[10] Ueber Versuche mit Veronal bei Erregungszuständen der Paralytiker. Centralbl. f. Nervenheilk. u. Psych., März 15, 1904.

obtained. Its use has been highly recommended by many competent observers in the treatment of simple insomnia.

Paraldehyde, in spite of its nauseous taste, is extensively used. It seems to have no unpleasant after-effects and has been strongly recommended in all forms of alcoholism and in various types of mania. It is supposed to be of special value in the senile and arterio-sclerotic forms of alienation. Cumulative action and idiosyncrasies for the drug have not been noted even when its use has been continued for a long time. The dose is from 15 to 60 minims (1 to 4 cubic centimetres) largely diluted with syrup and flavored with tincture of orange peel or some aromatic. Cases of the paraldehyde habit are not uncommon.

The *bromides* are still considered of great value. They are particularly useful in cases of excitement with sexual manifestations as well as in the forms associated with epilepsy. They are sometimes very efficient in cases of insomnia due to the milder forms of maniacal excitement. The potassium and sodium salts as well as bromipin are most commonly employed. Their continuous use, however, in large doses, is apt to set up gastro-intestinal disturbances and occasionally severe toxic symptoms, and patients who have been taking them for a long time often show considerable disturbances in associative memory, acne, loss of appetite, and foul breath. Individual idiosyncrasies are not uncommon.

Within the past decade *chloral hydrate*, in doses from 5 to 20 grains (.3 to 1.3 grammes), has been less frequently employed on account of various toxic symptoms, such as slowing of the heart's action, irregular pulse, and various disturbances of the gastro-intestinal tract, which sometimes follow its use. A certain degre of tolerance for its action is soon established and if continued the drug has to be given in increasing doses. In all cases of cardiac disease it is contra-indicated.

Sulfonal is often useful in the treatment of cases of alienation. The disadvantages attending its use are that it is slowly absorbed and the hypnotic effect is delayed. In spite of these

objections, it may be most successfully used for the treatment of insomnia, and may also be administered in many of the milder forms of excitement. The dose varies from 10 to 30 grains. A number of observers have reported hæmatoporphyrinuria as well as excessive mental cloudiness and occasional attacks of prostration with slight irregularity in the heart's action. *Trional* given in doses of from 10 to 25 grains (1 to 2 grammes) is often efficacious in the same class of cases in which the administration of sulfonal is indicated. The hypnotic effect is less delayed, but undesirable symptoms similar to those mentioned in connection with sulfonal have been recorded.

Chloralamide has frequently been recommended, but has no advantages over the drugs already mentioned.

With the single exception of the thyroid extract in cases of myxœdema and cretinism, to which reference is made later on, the various *organic extracts* have not proved efficacious. Among other therapeutic procedures that have been tried and found wanting is the use of various substances which normally set up a febrile reaction, in the form of strong inunctions, blisters, and injections. These measures were based on the theory that the occurrence of fever frequently seemed to be followed by a disappearance of some, if not all, of the mental symptoms. Without going so far as to say that they never do good, mention may be made of the fact that many persons suffering from alienation not infrequently have high temperatures without deriving any apparent benefit, and even at times show an actual increase in the severity of their former symptoms. Equally unsatisfactory have been the results obtained by Binswanger and others who injected the toxins formed by certain bacteria, the colon bacillus, typhoid bacillus, etc.

Saline infusions, however, have proved to be of definite value in the treatment of various psychoses, particularly the marked toxæmia associated with febrile forms, acute delirium, amentia, and the more acute phases of general paresis.[11] They

[11] Deutsch, Julius: Die Behandlung der progressiven Paralyse, sowie toxischer und infectiöser Psychosen mit Salzinfusionen. Allg. Zschr. f.

were first recommended in 1890 by Sahli in cases of uræmia and in collapse. Various formulæ have been used, but the one most generally employed is the 0.7 per cent. physiological salt solution. If necessary, duboisin, hyoscin, or other medicaments may be added to it. From 400 to 800 cubic centimetres are generally given, according to the indications, at intervals of from 36 or 48 hours. Some clinicians give even larger quantities, as much as 1000 cubic centimetres, and at shorter intervals. Donath highly recommends the following formula:

Potassii sulphat., 0.25 gm. (gr. iv);
Potassii chlorid., 1.00 (gr. xvi);
Natrii chlorid., 6.75 (gr. cx);
Potassii carbonat. pur. sicc., 0.40 (gr. vi);
Natrii phosphat. cryst., 3.10 (gr. l);
Aq. destillat., 1000 (1 quart).

The following method of administration is recommended: The fluid is sterilized in a two-litre glass vessel placed inside a second larger vessel full of water, which is then boiled for from half to three-quarters of an hour and allowed to cool to 40° C. The injection, under strict aseptic precautions, is made into the subcutaneous tissues in the neighborhood of the breast, hypochondrium, or beneath the skin of the abdomen, or, as other authorities prefer, directly into the venous circulation, although it would not appear that there exist any special indications for the latter procedure. Not infrequently a considerable rise in temperature is noted, but further than this, if the injection is properly given, there are no untoward results. A difference of opinion still exists regarding the class of cases in which saline infusions do the most good. They are strongly indicated in all toxic conditions where there is motor restlessness, but conditions in which mental depression is marked do not seem to be benefited by this procedure, and in some instances it has been followed by a temporary increase in the severity of

psych. gerichtl. Med., Bd. 60, H. 4, Berlin, 1903. Di Gaspero, H.: Ueber die Kochsalzinfusionstherapie bei Geisteskranken. Therap. d. Gegenw., 1902, S. 350 ff. Wickel, C.: Kochsalzinfusionen in der Therapie der Psychosen. Psych.-Neurol. Wchnschr., 1903, 18, 19.

the mental symptoms. Soon after the injection of the fluid there is a marked increase in the quantity of urine excreted. When, for various reasons, it does not seem advisable to give the fluid hypodermically, high rectal injections of salt solution may be substituted.

What has been said so far in regard to treatment applies chiefly to what may be done for patients in modern hospitals reserved for the more acute types of mental alienation. As soon as the chronic stage of the disorder is reached, such individuals are better off in an asylum situated at some distance from the city. Here the patients can find better opportunities for employment both indoors and out, and at the same time they are not brought into contact with the more acute forms of alienation—a matter of great importance for both classes of patients. Much has been written about the home treatment of cases of alienation. Provided the patients have first been under the observation of a thoroughly competent alienist for a time sufficient to allow him to make a diagnosis and determine that the sufferer may, with safety to himself and his relatives, be given a considerable amount of freedom, it is possible to carry out the treatment along certain lines at home, particularly if the general practitioner under whose charge the patient falls is willing to utilize the various suggestions which should be given him. But until a positive diagnosis has been arrived at, no case of alienation should be treated outside of an institution. During the remissions that occur in cases of dementia præcox and general paresis and in a few instances during the period of convalescence from the acute psychoses the patient may be allowed to remain at home, provided that a suitable environment can be maintained for him there.

CHAPTER VI

THE MODERN HOSPITAL FOR THE INSANE[1]

The rapid increase in insanity that has followed the feverish activity in the last few decades is ever bringing up for solution new problems dealing with the adequate provision of suitable institutions for persons who have been unable to bear up against the stress, and who have consequently become incapable of caring for themselves, or, still worse, who are a menace to the peace and welfare of those about them. Nor can we sit down with folded hands and point with pride to what has already been accomplished. It is true that among our predecessors, and even among those who are still living, it is not hard to find "makers of history," men preëminent in sterling character and energy, single-hearted, with one ruling idea and aim in life—to rescue the insane and feeble-minded from neglect or even cruelty; nor can we ever forget the debt of gratitude we owe them. But with changed times come changed conditions, and progress is ever calling for renewed and steady effort until we shall have come much nearer to perfection than we are at present.

Broadly speaking, the insane for whom public care has to be provided may be divided into three classes, of which, however, numerous subdivisions are possible:

I. Those requiring constant care, supervision, and the best possible medical treatment, either because (a) they are in an acute stage of mental disease and are violent and dangerous

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[1] Griesinger: Archiv f. Psych., Berlin, 1868-9. Transl. by Frank R. Smith, Am. Journ. Insan., 1903, vol. lx. Kraepelin: The Duties of the State in the Care of the Insane. Transl. by Stewart Paton, Am. Journ. Insan., vol. lvii, 1901. Peterson, F.: A Visit to the Newest Psychopathic Hospital. Med. News, vol. lxxvi, 1900. Mitchell, S. Weir: Address before the fiftieth annual meeting of the Am. Med.-Psychol. Association. Proc. of Am. Med.-Psychol. Association, Phila., 1894.

to themselves or their fellowmen, or (*b*) they are in an incipient and presumably curable stage of insanity and require special and immediate attention in order that their chances for recovery may be materially increased.

II. Those requiring less constant care and supervision, but who, nevertheless, are fitted only for institution life (in asylums or sanitaria.)

III. Those who, although not capable of taking care of themselves, are able to live in farm colonies or in private families.

The progress referred to above has mainly affected the last two classes. To a large extent these patients are insured a comfortable existence, and recoveries among them—at least, sufficient to warrant a return to their homes—are happily not so very rare. But in order that we may be able to strike at the root of the matter we must devote our best efforts (1) to curing all recoverable cases—and this can be done only by taking them in hand at the earliest possible moment, when the disorder is still in its incipient stage; and (2) to giving to as many physicians as possible the chance of receiving a thorough training in psychiatry, in order that cases of insanity may be recognized by the general practitioner before it is too late, and that the importance of preventive psychiatry may be fully realized by the leaders of thought in every community.

These two fundamental needs, then, since they can not be satisfied by the asylum, the farm colony, and the boarding-out system, call for the establishment of special institutions which have been variously designated as hospitals for the insane, psychiatrical clinics, or psychopathic hospitals; and these will form the subject of the present chapter.

Unfortunately, institutions that promise the realization of these ideals are too rarely found either in Great Britain or the United States. That the need for them has been felt is evident from the efforts that have been made to transform some of the smaller asylums into psychiatrical clinics. Nor is it to be wondered at that such endeavors have proved only partially successful, inasmuch as the former had been planned

at a time when the present exigencies in the care of the insane either did not exist or were unrecognized. As a result, these transformed institutions—situated for the most part far from the centres of population and hampered by a general arrangement that worked against the ready admission of patients, while rendering instruction to students in psychiatry impossible—could never represent anything more than a transitory stage—a compromise between the asylum proper and the real hospital. The former, placed at some distance from the city and with accommodations for a relatively large number of patients—from 200 to 1000 or even 2500—can with proper forethought afford the best care possible for the chronic insane—the indications for progress being along the lines of improvement in hygienic surroundings and facilities for light employment in shops or in the open air. In these communities, however, hospital treatment must necessarily always be a secondary consideration, nor should they be hampered by having thrust upon them burdens and responsibilities which they are not adapted to meet.

To restate the proposition, then, the psychiatrical clinic or hospital is intended to satisfy two fundamental needs: (1) Better provision for the care and cure, if possible, of cases of acute and incipient insanity; (2) adequate provision for instruction in treatment and for investigation into problems upon the solution of which depend the arrest of the development of insanity in the State. But in order to fulfil these objects, its structure and organization must be planned so that the following conditions will be satisfied:

(1) Ease of access. The institution should be near to or within the limits of a city.

(2) A limited capacity, in order that every individual patient may be made the subject of special study.

(3) Perfect construction, equipment, and organization, in order that a thorough and energetic treatment can be undertaken for all patients for whom there is hope of recovery.

(4) A relatively large staff of physicians and nurses.

(5) Ample provision not only for the teaching of stu-

dents, but also for the prosecution of post-graduate investigations and research in clinical psychiatry, psycho-pathology, and in the anatomy and pathology of the nervous system.

(6) The ready admission of patients and their speedy transference, when necessary, to other more appropriate institutions. Provision for out-door and voluntary patients.

The manner in which, so far as our present experience has taught us, these conditions may best be met and fulfilled will now be briefly discussed.

(1) *Location.*—If the institution be located at some distance from a centre of population, the commitment of cases of incipient insanity will be rendered more difficult and not a few patients will lose the opportunity for speedy treatment—which in some cases is equivalent to missing their only chance for recovery.

Of course, ideal conditions can not always be realized, but, if possible, the psychiatrical hospital should be within the city limits or quite near them. The extensive grounds, large gardens or farm, so essential for the asylum or the convalescent home, are not needed for the hospital, although a certain area of ground—from one to three acres—is indispensable. This would supply sufficient space for a small garden where the convalescent patients could sit or walk in the open air. Again, the easier of access the institution is to a fairly large centre of population, the less will be the antipathy of patients towards a residence there, since they will feel that they are not shut up in some remote asylum away from the world and all their friends; and, moreover, they will be spared a long and tedious journey, which is distressing alike to patients and relatives.

Such an institution, when situated in a city, will afford the medical profession an opportunity of becoming as intimately acquainted with its organization, its methods, and its results as is the case with the medical hospital; while at the same time the medical staff will not be isolated and will have every chance of keeping in touch with the advances that are being made in general medicine, of which their own is a most

important branch. Again, the mere enumeration of the problems to be solved, involving questions in heredity, the psychological analyses of symptoms, the chemical study of secretions and excretions, improvements in methods of physical diagnosis, ought to be sufficient to emphasize the necessity of placing these psychiatrical hospitals in immediate proximity not only to other medical clinics, but also to the non-medical parts of the university. The highest types of clinical and laboratory investigation can only be accomplished in hospitals that are sufficiently close to a good university for the medical officers to feel the stimulating effect of the encouragement and aid given to all forms of investigation; nor is it probable that high ideals in the character of the work to be accomplished will be as readily sustained under other conditions.

(2) *A Limited Capacity.*—The capacity of the hospital must naturally depend much upon the demands of the community in which it is situated. It is advisable, however, that it should be relatively small, so that each individual case can be studied carefully in a reasonably short time. In asylums for chronic patients there is much less urgency in this matter, but in a case of acute insanity a speedy and as far as possible a correct diagnosis is most important, inasmuch as the future of these patients is in the balance. Roughly speaking, institutions varying in capacity from 80 to 100 beds represent the size which best lends itself to an efficient organization. Furthermore, the fact that the accommodations are limited will serve to prevent the accumulation of chronic cases which belong elsewhere.

(3) *Construction, Equipment, and Organization.*—The problems dealing with the construction of such hospitals for the insane have not as yet received much attention in English-speaking countries. Many of these institutions in Germany are admirably adapted to meet the needs of the several communities in which they have been established. But in America and England conditions are so different that the German ideas could not be accepted without considerable modifications in the general plans. With us most of the details have yet to

be worked out, but even at the present time a few axiomatic propositions are permissible.

In the first place, from a technical stand-point, in all matters of construction, equipment, and organization such an institution must partake of the character of a hospital as fully as any of the best institutions provided for the care and treatment of the so-called bodily disorders. This at once necessitates the provision for the treatment in bed of a large percentage of the patients. Experience has taught us that many sufferers from acute psychoses or exacerbations of the more chronic mental disorders do far better when confined to bed until the acute symptoms have passed off. Physicians connected with out-patient departments every day meet with individuals suffering from incipient insanity, whom they are unable to benefit at their homes because facilities for putting the patients to bed, isolating them, and employing the other necessary procedures are lacking. In addition to the various forms of apparatus which naturally belong to a general hospital, the institution should be well provided with all the appliances necessary for carrying out hydrotherapeutic measures. It should also be possible to give Turkish baths, the various sprays and douches, and also the prolonged or continuous bath.

The institution should contain two small reception departments (with separate accommodations in each for men and women), where new-comers may stay for a few hours, until they have been carefully examined and a rational course of treatment has been outlined for each case. One department should be set apart for maniacal or delirious patients and the other reserved for individuals who are less noisy and are not apt to disturb their companions. It is very inadvisable to put quiet patients with those who are violent, especially as many individuals suffering from incipient insanity retain a fair insight into their own condition, and nothing can have a worse mental effect upon them than to be brought into close associations with pronounced forms of insanity.

(4) (*a*) *The Medical Staff.*—With regard to the organi-

zation of the medical staff, it is quite evident that the number of physicians required will be relatively greater than that deemed necessary for a general hospital. The fact that the examination of an average insane patient takes two or three times as long as when one has to deal with an ordinary sick man means that a much larger staff of physicians can find full employment.

In this connection it may be pointed out that if the psychopathic hospital is established in close proximity to a medical school a great many advantages, not only to the medical staff but also to the patients, may be obtained from the employment of "voluntary assistants." Young graduates or medical students accepting these positions and working for a few hours every day can easily be trained in taking histories and assisting in examinations with great benefit to themselves, while at the same time they can relieve the members of the medical staff from much of the dull routine which otherwise would fall on them and become so burdensome that it might deaden their interests in the higher problems connected with their profession.

The sole responsibility of the clinic must rest upon the medical director, who should be in absolute control of all medical matters, and who should have a continuous and not an interrupted service. The inferior character of the work accomplished in the general medical hospital, where one physician attends for a few months and is then followed by another, as compared with that done where a single head is responsible for the whole service year in and year out, should be a sufficient argument against the establishment of the rotation method in connection with our hospitals for the insane.

It is advisable that the management of the institution should be under the ultimate control of the university authorities, the director being a member of the medical faculty.

The department of psychiatry may justly be considered one of the most important in a university, and the directorship of the hospital and the professorship of psychiatry should be held by one and the same man, who should receive a remunera-

tion sufficiently large to entirely relieve him of the necessity of seeking outside practice.

The examination of the patients, the general direction of the medical work, the supervision of investigations carried on by competent assistants in the laboratory, and the training of students—undergraduates and postgraduates—will be more than sufficient to occupy the attention of the chief medical officer. If the medical work is to be successfully organized and carried on, it is essential that the assistants and students be stimulated and encouraged by the example set by the director in undertaking and carrying out original investigation, and in view of the difficulties connected with the clinical and laboratory problems with which he has to grapple, sufficient time for study and investigation should be allowed him.

It is far better that the director should not live in the hospital. During the night and for the few hours of the day during which he is absent his place can perfectly well be taken by the first assistant. This officer, whose duties should be regulated by the director, whenever it is possible, should be a comparatively young man, who is thoroughly interested in his subject and for the sake of the valuable experience that such a position carries with it is willing to spend at least two years in the service of the institution. It is readily seen that too many changes would be unjust not only to the patients, but also to the director, since the resident, when he has once become familiarized with his duties, can not only take better care of the former, but can also relieve the latter of many of the responsibilities connected with the clinic and the supervision of the work that is being done in the laboratory.

It would be an ideal arrangement if the interests of the first assistant were directed along lines different from those of the second assistant, in order that the whole field of psychiatry might as far as possible be represented, at least in the interests of the staff. Thus, if one assistant shows a preference for the pathological problems, it would be well if one or more of the others were to take up more especially psychological, physiological, and chemical studies.

On the whole, it would seem better that the responsibility for the male and female wards should rest upon one individual and that two assistants should never have equal authority. In a hospital with accommodations for 100 patients, in addition to two resident physicians, it would be advisable to have one or more graduates as clinical assistants, who could receive their board and lodging but would be willing to work without a salary. Again, as has been said before, much of the routine work could be done by students.

(*b*) *The Nursing Staff.*—As in the case of the medical staff, the conditions existing in a general hospital are not to be taken as an index of the number of nurses that is necessary for the psychiatrical clinic. For several reasons a relatively much larger number is required in the latter. In the first place, very few of the patients are capable of aiding in the carrying out of the treatment, and others, actively or passively, resist any form of interference. Besides this, more particularly in a hospital for cases of acute insanity, a large majority of the patients have to be carefully watched every moment, lest a sudden impulse should lead them to commit some act of violence and to inflict an injury either upon themselves or upon those around them. When these facts are taken into consideration, it becomes at once apparent with what great mental, in addition to physical, strain the duties of the nurse are associated. Moreover, for the same reason, the hours of duty in the wards should undoubtedly be short, otherwise the nurse cannot fail to lose much of the mental freshness and vigor so essential in dealing properly with the insane.

The organization of the nursing staff could be safely intrusted to a superintendent who has already had some practice in the education and training of nurses in a good general hospital and has afterwards had some practical experience in the care of the insane. The latter would also be highly desirable in the case of a certain proportion, at least, of the head nurses.

(*c*) *Facilities for Teaching and Investigation.*—It is always a matter of surprise to visiting Americans to see the large sums of money that have been and are being expended in

Germany for building and equipping laboratories—pathological, physiological, and chemical—in connection with psychiatrical clinics. The amount of expenditure justifiable in the several cases necessarily depends upon a variety of conditions. For example, if the psychiatrical clinic is in close proximity to some good medical school or university, the laboratory space can be readily confined to two or three medium-sized rooms, in which a few students can work, since abundant facilities can be afforded to the members of the staff and special investigators in some of the other buildings—the anatomical, pathological, or physiological laboratories. If, however, the institution is situated at some distance from a centre, so that these conveniences are not available, much larger sums will have to be spent in providing separate and commodious laboratories.

(6) *The Admission and Transfer of Patients.*—For the benefit of the patients, admission into these hospitals should be made as easy as possible, and there should be a minimum amount of formality and red tape. Elaborate legal procedures can not fail to deter many patients from availing themselves in time of the immense benefits offered to them and their families by such institutions. In our day and generation the argument that, if certain long-established forms are done away with, many sane persons will be liable to detention in institutions against their will, is too ridiculous to deserve serious consideration. To render such an outrage possible, the conspiracy—between the medical officers and nurses, and even servants of the institution, who would have to be in league with the committing physicians and the patient's friends—would be so complicated and require such wide ramifications that it would only be a matter of a few hours or days before the news of the detention would be spread abroad and reach the ears of the members of the State Board of Lunacy and the public.

Voluntary Patients.—An individual who is conscious that his mental condition renders it unsafe for him to remain at large should readily be able to obtain admission into the hospital until a careful examination can be made into his condition. If, however, on mature consideration it becomes apparent

to the medical officer that the patient can not be trusted or that he will probably later object to remain until he has sufficiently recovered to warrant his discharge, the friends should at once be advised of the matter, so that a formal commitment can be made.

Out-Door Patients.—In connection with the hospital a well-organized dispensary or department for out-door patients is an essential supplement to the hospital proper. In all our large cities patients come every day to the neurological clinics who are on the border line of insanity, although their closest relatives may never have suspected the existence of any mental defect. Such patients could be kept under observation in the out-door clinic and could at once be committed, if necessity arose, to the hospital itself. Moreover, on being discharged from the hospital, patients could be told to report at the dispensary at stated intervals, and thus be kept under observation for a length of time sufficient to satisfy the physician how far the recovery has proceeded.

It is evident that all patients who, after careful examination, are found not to be of the class for which the psychiatrical hospitals have been established or who are evidently passing into a chronic stage of insanity should immediately be transferred to other more appropriate institutions.

Briefly, then, the economic advantages to a community of a psychiatrical hospital with a well-organized out-patient department may be summed up as follows:

(1) A large number of patients would receive the benefit of skilled medical care at a stage of the disease at which there is great hope of either aborting or cutting short an attack of insanity. Thus there would be an actual decrease in the number of insane individuals.

(2) Numerous fatalities—suicides and homicides—would be prevented by the timely commitment of individuals suffering from acute attacks of insanity.

(3) The asylums proper, in contradistinction to psychiatrical hospitals, would be relieved of many of the more troublesome cases and would, therefore, be much better fitted to carry out their appropriate work.

CHAPTER VII

GENERAL CAUSES OF INSANITY

The study of the etiology of mental disease is bound up with that of the most difficult problems in medicine. The investigator, as a rule, does not have to deal with causes which are immediately operative, but rather with those whose action is delayed and prolonged, it may be, over a number of years. Frequently the individual does not come under observation until the original cause has ceased to operate and a condition so complex has developed that it is impossible to determine the essential factor or factors in the etiology. Unfortunately, the study of the mental functions of the normal individual has not been of the character to be of great aid to the alienist in attempting to analyze the disturbances grouped as insanity. As has frequently been pointed out, clinical observations have been largely isolated and disconnected, so that no standards exist by which comparison can be made and early deviations from the normal mentality detected. Furthermore, the transition from the normal to the abnormal in the mental life, except in isolated cases, is slow in its progression; and even in these latter instances it is still a matter of doubt whether a given individual, who has been perfectly normal mentally, as a result of some accident can suddenly become afflicted with a definite alienation. In the etiology of mental diseases, then, we have to do with an exaggeration of personal idiosyncrasies, with the accentuation of abnormal traits in character, and with a more or less complete dissociation of the entire personality. How far the modifications which take place in the individual in alienation are due to external and how far to internal causes it is well-nigh impossible to say. To be able to determine the operative cause in any case of alienation implies the possession of some knowledge regarding the exact nature of the transition

that takes place in the patient when he passes from the actual world to the world of imagination in which the insane person lives.[1] Concerning the nature of this change we have no knowledge. This one fact, however, is obvious, that the variety of fluctuations in the normal mental life is strongly contrasted with the more or less monotonous character of the mental processes in those who are insane.

Again, in many instances, to attain a comprehensive knowledge of the development of a case of alienation would necessitate not only a study of causes, but an insight into the character and temperament of the individual prior to the appearance of the mental symptoms. Every psychosis begins with a change in sensation, temperament, or representation that affects the relation of the individual to his environment. What the earliest changes are can as yet be only vaguely conjectured. A rich reward awaits the clinician who will patiently study the earliest symptoms of imperfect functioning of the cerebral cortex as they appear in connection with the slight changes in function of many of the internal organs. As we are still in ignorance as to the precise manner in which causes operate, the view of Möbius, that mental diseases should be classed as endogenous or exogenous, or that of Kraepelin, that we should speak of internal or external causes, although suggestive, does not aid materially in the solution of the problems.

Heredity.—There is so much glib talk about the problems of heredity that the uninitiated are led to believe that a great deal is definitely known regarding the transmission of normal and abnormal mental traits; indeed, many alienists fail to appreciate our limitations in this respect. At present we do not possess an accumulation of carefully collected clinical data from which it is justifiable to draw any really valuable deductions, nor can the meagre facts recorded in the average clinical history be analyzed in such a way as to make clear their bearing upon the biological problems under discussion.

[1] Tiling, Th.: Zur Aetiologie der Geistesstörungen. Centralbl. f. Nervenheilk. u. Psych., 1903, September, Bd. xiv.

Moreover, a little practical experience will readily convince the investigator that the data connected with the supposed transmission of mental traits, that can be gleaned by the alienist, are generally far too vague to merit serious consideration. No doubt, inquiries concerning the mental traits and characteristics of the ancestors of those afflicted with alienation often bring to light interesting information about the environment in which the patient has been born and brought up, but any attempt to deduce therefrom conclusions as to the quality or quantity of natural mental capacity that may be said to be transmitted from the individuals of one generation to those of the next will at once prove unsatisfactory. Such an investigation must necessarily deal with a number of indefinite factors. What is born with the individual? What happens to him after birth?[3] These are the two main problems, involving many others, which call for immediate solution, and to obtain a satisfactory answer to each of these careful investigations along many different lines are necessary. Broadly speaking, then, we distinguish between the so-called original traits or inherent qualities, that are the result of influences which have acted prior to birth, and the secondary or postnatal characteristics that result more immediately from environment and education. It is readily seen that essential points in the discussion of the first question are hard to arrive at, and the little information obtainable frequently comes to us second-hand and is obscured by so many other factors that it becomes almost impossible to form even a conjecture as to what mental characteristics can be attributed to transmission from the ancestral line. Koller[4] examined the family histories of 370 perfectly sane individuals and found evidence of mental deterioration among the progenitors in 59 per cent. of the cases, whereas for 370 insane persons the hereditary factor was present in 76.8 per cent. The mere citation of these figures is

[3] Thorndike, Edward L.: Educational Psychology. New York, 1913.
[4] Koller, Jenny: Beitrag zur Erblichkeitsstatistik der Geisteskranken im Kanton Zürich, etc., Arch. f. Psych., xxviii.

sufficient to show how careful investigators should be in basing deductions as to the relative importance of "a bad family history" upon any series of figures which have not been subjected to the severest form of critical analysis. Again, the difficulties involved in the discussion of the problems relating to the inheritance of mental traits are far more complex than those encountered in dealing with the transmission of mere physical qualities; and they are still further increased when an attempt is made to determine the relation of these questions to clinical problems, since in order to arrive at any sound conclusions it is first necessary to have a clear understanding of the pathogenesis of the various forms of insanity, and, as has been pointed out elsewhere, this latter field is still unexplored.

Perhaps a concrete example may serve to bring out some of these difficulties. Morgan* has referred to the classical experiments of Brown-Séquard in which epilepsy appeared in animals born of parents rendered epileptic by an injury to the spinal cord or by section of the sciatic nerve. At first thought this evidence might seem to support the Lamarckian hypothesis of the inheritance of acquired characteristics, but, as Morgan has pointed out, so little is actually known about the nature of the disease in question that it is not justifiable to indulge in any speculation as to the deductions that are warranted from experiments of this character. During uterine life so many possible factors may be operative that the appearance of postnatal epilepsy can not as yet in any sense be considered evidence of the immediate transmission of an acquired defect. Epilepsy, which may very properly be taken as a prototype of alienation, is not in any sense an entity, but a condition or symptom-complex, and may be the result of a great variety of causes, and the same is true in regard to all the various psychoses which represent more or less indefinite complexes and in which the possible effects of a multiplicity of etiological factors have to be taken into consideration. In the description of physical conditions we possess standards of measurement

*Evolution and Adaptation. New York and London, 1903.

which are exact and which may be stated in figures; whereas, in the consideration of mental traits comparative estimates vary greatly, as the result not only of the personal equation, but also of the conditions under which the observations are carried on. Even if it were possible to establish certain standards by which the mental capacity of the members of a family could be measured, the departures from that standard could be the result of so many different conditions that in the final analysis the observer would be practically unable to put his finger upon the particular facts or factors concerned. Take, for example, a family which for several generations has resided in a small country town and in which, as each new generation has appeared, the same factors have been operative in moulding the mental and physical development along certain lines. If now at the end of a given time this family removes to a large city, or if in any way the immediate environment is suddenly changed, so many exigencies arise and so many new conditions at once become operative that it is impossible to enumerate the agencies which may be potent in affecting the development of the children born in the new environment. The same difficulties arise even when the transmission of traits, not from remote ancestors but directly from the mother to the child, are under discussion. The action of environmental influences—anæmias, toxic agents, and the like—can not always be recognized and definitely distinguished from the other forces affecting the life of the organism. At present the majority of biologists declare that we have no direct inhibitable evidence that substantiates the Lamarckian view. It only remains, then, for us to confess our practical ignorance concerning the immediate problems connected with the acquisition of mental traits and their transmission to a line of descendants, and our inability to measure with any precision how far acquired conditions of general health produce changes in the germ plasm and to what degree such changes influence mental qualities in the offspring.

The so-called personal predisposition of certain individuals towards mental disease is of great practical interest. As we have already seen, this tendency seems to be the result

of a number of factors which at present can not be successfully interpreted, although the opportunities for studying such phenomena are numerous. In pronounced types of the so-called cumulative or convergent hereditary predisposition the physical or mental degeneracy is said by some observers to be found in both the paternal and the maternal ancestry. In the unilateral type the degeneracy appears either on the maternal or the paternal side.

Atavistic Heredity.—Tanzi and Riva affirm that an atavistic tendency is very important in certain forms of degeneracy, and becomes apparent in a marked predisposition shown by members of a family to outbreaks of alienation. According to these observers, in this form certain signs of nervous or psychopathic degeneracy have apparently persisted through a number of generations and have finally become so accentuated that the individual concerned seems to be reduced to the primitive state from which the race has shown a slow evolution. This form of heredity has been particularly emphasized by the anthropologists,—Lombroso and others,—and this so-called cumulative tendency is supposed to satisfactorily account for the ferocity of certain criminals, as well as for the fact that many of these low instincts have a tendency to become permanent in certain families. Another important feature lies in the fact that the reappearance of morbid traits in the line of the descendants may be either simple or transformed (homomorphous or heteromorphous). Thus when the same form of degeneracy or psychosis appears it has a tendency to recur practically unchanged in the descendants, whereas the transformed type is characterized by a complete change in the form of the degeneracy or psychosis. Since the days of Morel[1] the importance of the so-called hereditary degeneracy has been emphasized by numerous investigators. Morel himself holds that the law of transmitted degeneracy is more or less definite and is capable of being formulated somewhat as follows: In

[1] Traité des dégénérescences physiques, morales et intellectuelles de l'espèce humaine, 1857.

the first generation we have a nervous temperament and ethical and moral defects; in the second a tendency towards apoplectiform seizures, severe neuroses, or alcoholism; in the third, marked psychic disturbances, suicidal manias, and intellectual defects; in the fourth, idiocy, imbecility, and other anomalies in development are noted. Nevertheless, it must be said that in view of the great complexity of the problems involved such a definite formulation must necessarily be merely conjectural. Pierezani[6] examined the family histories of 1958 persons,—1064 males and 894 females, representing 889 families,—and came to the following conclusions: The occurrence of disease in the father or mother seemed to have a more serious effect upon the male than upon the female descendants. The "cross-heredity" is apparently more marked between mother and son than between father and daughter. Wiglesworth[7] examined 2445 cases of mental disease with a special view to determining the relative importance of the hereditary factor, and concluded that it was present in 28 per cent. of all the cases, but was less frequent in men than in women. Where the mother had suffered from alienation, and where there were both sons and daughters among the descendants, the latter were more commonly affected than the former. Our own observations do not confirm the experience of other alienists that the daughters are less prone than the sons to show signs of mental aberration when the father has been insane.

Consanguineous marriages are said to be often followed by anomalies in the children. Thus, in a family observed by Mathieu,[8] which consisted of 43 descendants of parents who were blood relatives, 10 were described as "peculiar," 3 as fools or idiots, 3 were deaf-mutes, and 2 committed suicide. Howe studied 95 children, the issue of consanguineous mar-

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[6] Ulteriore contributo allo studio delle leggi che regolano la ereditarietà psicopatica. Atti dell' XI Congresso freniatr., Ancona, 1904.

[7] The Presidential Address delivered at the Sixty-first Annual Meeting of the Medico-Psychological Association, held at Liverpool on July 24, 1902. The Journ. of Ment. Science, xlviii. p. 621.

[8] Gaz. des Hôp., 1890, p. 1269.

riages, and found that 44 were idiots. The world's history affords interesting examples of the importance of the unfortunate results that follow too close and frequent intermarriages between relatives.

The importance of the hereditary factor varies, not only in different countries, but also in different races and in different social states. Thus, for example, its significance is undoubted in aristocratic circles, in classes where the marriages are largely confined to individuals of the same social and intellectual standing, and among certain races or sects, such as the Jews or Quakers. In this connection, however, it has been questioned whether the mere inbreeding of families in itself necessarily gives rise to deterioration, provided there is no sign of degeneracy in either of the parents.

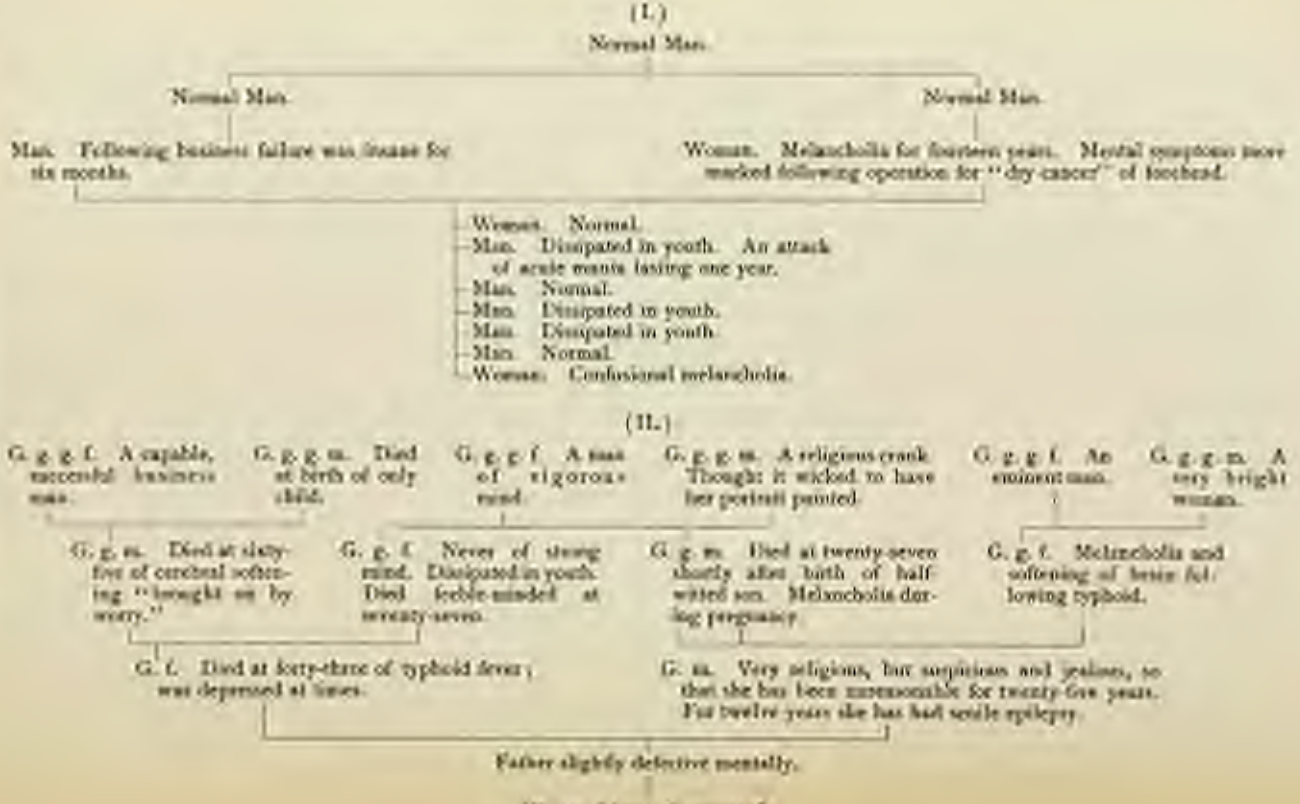
The evidence respecting heredity as a factor varies greatly, but its influence would appear to be very pronounced in certain psychoses, such as alcoholism, manic-depressive insanity, and epilepsy, whereas in other maladies, such as the arterio-sclerotic insanities and the senile psychoses, it is likely to be comparatively unimportant. As regards the so-called signs of degeneracy, it is probable that alienists have gone too far and have drawn too sweeping deductions, and we are now beginning to see that the use of the term needs to be qualified in each individual case. Broadly speaking, the signs of degeneracy may be grouped under two heads: (1) the somatic and (2) the psychical. In the first group we meet with a variety of manifestations which indicate interference with development, and are most marked in the defect psychoses. Among these may be mentioned epileptiform seizures, attacks of severe neuralgia, a tendency to sexual and alcoholic excesses, anomalies of dentition, intolerance for alcohol, and various forms of paralysis, either limited or more or less general in character. The various forms of psychic degeneration are manifold. They include an excessive impressionability, a tendency towards the development of hallucinations and delusions whenever the bodily resistance is at all lowered, anomalous affective states, excessive development of the imagination, a tendency to lie, and not in-

frequently the various imperative processes, impulses, phobias, and so on, all of which symptoms are generally characterized by a certain degree of periodicity, becoming more marked when the individual is obliged to live in an atmosphere which throws too great a strain upon his nervous organism.

What is greatly needed in the investigation of the question of the hereditary transmission of mental diseases are carefully planned and executed studies of the family histories of those suffering from alienation, carried through not one but over several generations. As the question of environment is such a difficult one to eliminate, it is better that for the present only those patients be selected who have come from communities in which there has been comparatively little change in the habits of life or general social conditions in which they have been born and brought up.

The family histories on the following page, tabulated by Dunton, while giving an important clue as to the previous environment in which the patients were born and bred, do not offer sufficient data upon which to base any theory in regard to the direct transmission of alienation.

Environment.—In this connection a great variety of different factors directly or indirectly provocative of alienation may be referred to. It is a matter of common observation that mental disorders show marked variations in type among individuals of different nationalities. An excellent example can be obtained from a study of the various forms of alcoholism. Thus, in southern Italy acute alcoholism is practically unknown, and it is only as one travels northward and the climatic conditions change that there is a notable increase in the number of the acute psychoses resulting from this form of intoxication. Again, general paresis is found much less frequently in warm climates than in those in which the changes of temperature are greater. In certain countries, such as Abyssinia, even where the percentage of syphilis among the natives is very high, cases of general paresis are almost unknown. More than one observer has called attention to the fact that there are


(I.)
Normal Man.
Normal Man.
Normal Man.
Man. Following business failure was insane for six months.
Woman. Melancholia for fourteen years. Mental symptoms more marked following operation for "dry cancer" of forehead.
Woman. Normal.
Man. Dissipated in youth. An attack of acute mania lasting one year.
Man. Normal.
Man. Dissipated in youth.
Man. Dissipated in youth.
Man. Normal.
Woman. Confusional melancholia.
(II.)
G. g. g. f. A capable, successful business man.
G. g. g. m. Died at birth of only child.
G. g. g. f. A man of vigorous mind.
G. g. g. m. A religious crank. Thought it wicked to have her portrait painted.
G. g. g. f. An eminent man.
G. g. g. m. A very bright woman.
G. g. m. Died at sixty-five of cerebral softening. "Brought on by worry."
G. g. f. Never of strong mind. Dissipated in youth. Died feeble-minded at seventy-seven.
G. g. m. Died at twenty-seven shortly after birth of half-witted son. Melancholia during pregnancy.
G. g. f. Melancholia and softening of brain following typhoid.
G. f. Died at forty-three of typhoid fever; was depressed at times.
G. m. Very religious, but suspicious and jealous, so that she has been unreasonable for twenty-five years. For twelve years she has had senile epilepsy.
Father slightly defective mentally.
Woman [dementia present].

essential differences to be noted in regard to the various types of mental diseases which are found in America as compared with those in Europe. Thus White* has recently shown that the types of alienation vary in different parts of the United States; and the observations made by members of the staff at the Sheppard and Enoch Pratt Hospital would seem to indicate that the incidence of cases which resemble Meynert's amentia is greater than that noted in certain clinics abroad, particularly at Heidelberg, where this symptom-complex seems to be comparatively infrequent. Again, the statistics of Vienna, when compared with those of Heidelberg, show a more frequent occurrence of this form of alienation in the Austrian capital. The several mental disorders which are the result of drug intoxications other than alcoholism naturally vary in different localities. Thus, for example, it is not surprising to find that cocainism is more prevalent in the countries in which the drug is indigenous or that the psychoses associated with the eating and smoking of opium and the indulgence in the use of hashish are more common in the East. The frequency with which purely functional disorders, such as psychasthenia and epilepsy, are met with varies greatly in different parts of the world, while certain curious symptoms, such as Latah, or the phenomena of "running Amok," as found among the Malays, are almost entirely confined to certain localities.

Not only are different environments productive of certain more or less specific forms of alienation, but the change from one to another may be followed by equally unfortunate results, causing outbreaks of insanity among those who are mentally or physically unable to properly adjust their lives to the new surroundings. Instances of this influence are often noted in connection with persons who have left their homes to take up their residence in foreign countries. Mental disturbances of a more or less peculiar character are noted in the English people who spend portions of their lives in India, as well as in

*Geographical Distribution of Insanity in the United States. Journal of Nervous and Mental Diseases, May, 1909.

Americans who migrate to tropical climates. The outbreaks of insanity among our soldiers in the Philippine Islands present problems that deserve careful consideration.

The subject of environment also necessitates the discussion of local differences as well as the more immediate surroundings which an individual creates for himself. The types of alienation differ even among individuals who live in the same locality. Thus the negroes and the whites living in the same State will show certain differences in the types of mental disorders from which they suffer. Again, members of the Jewish race, no matter where they live, are generally thought to be particularly susceptible to nervous and mental diseases.

Sudden changes in environment occurring to individuals or whole races are frequently followed by an outbreak of alienation. Statistics show a great increase in the number of mental diseases following the sudden acquisition of wealth either by individuals or by communities. It is true that the exceptional man may be able to withstand sudden changes in his environment, but for the mentally unstable individual any marked and rapid alteration in his surroundings, whether it be in the nature of an elevation or lowering, is unquestionably associated with great danger. These undoubted facts demand the earnest consideration of those who are striving for the so-called elevation of the masses. To "hasten slowly" may in the end prove to be the kindest method.

Another important element in the causation of alienation is the great tendency shown to leave the country and congregate in cities. But while the dangers of too great centralization can hardly be overrated, it should not be forgotten that many persons who live in the country create for themselves an artificial environment and live in a manner which is quite as detrimental to their mental welfare as is the life of the individual in a crowded city. Monotony as well as over-excitement is provocative of mental disorders. There can be little doubt, however, that every social movement which tends to check the enormous increase in the population of the cities and to send many back to a rural life deserves to be encouraged.

The various conditions associated with the individual's daily life and work are also of importance in this connection. Here we find a great variety of causes operative which predispose towards alienation. As has been mentioned elsewhere, it has long been a matter of observation that workers in lead and various other toxic substances show a marked tendency towards the development of alienation.[18] In fact, nearly every form of occupation has its own especial dangers for the individual who is weakly and who has inherited or developed a tendency to succumb to nervous or mental strain.

As far as the professions are concerned, it has long been generally recognized that those which tend to develop the emotional life at the expense of the other faculties have special dangers of their own. Thus artists and musicians, who have allowed their lives to become too one-sided, are often found to possess an unstable mental equilibrium.

The effects of environment in the production of fatigue are considered elsewhere. Provided the individual is placed in hygienic surroundings and receives proper nutrition, it may be said that hard work—if anxiety and worry are eliminated—never results in alienation. On the other hand, individuals who have no regular work and no incentive in life readily become a prey to nervous and mental disorders; nor need we go far to seek for an explanation for the great prevalence of mental disturbances among the tramp class, as well as among the well-to-do members of society who are without definite occupation.

Imitation and Suggestion.[19]—In the history of the human race the phenomena included under these two terms have played a most important part, but here only their relation to mental disorders will be discussed. The so-called epidemic psychoses that were of so frequent occurrence during the Mid-

[18] Meillère, G.: Le Saturnisme. Etude historique, physiologique, clinique et prophylactique. Paris, 1903.

[19] V. Bechterew: Suggestion u. ihre sociale Bedeutung. Deutsch von Weinberg. Leipzig, 1899.

dle Ages have deservedly attracted the attention of physicians as well as the laity. These manifestations develop in connection with the social, religious, and political life of peoples, and at a time when the true nature of mental disorders was not understood, it was thought that a direct transmission of thought and energy through the agency of unseen powers took place. But even as early as the fifteenth or sixteenth centuries there were a few intelligent physicians who recognized that the pronounced psychoses, such as melancholia and mania, never appeared in epidemic form, and to-day it is generally agreed that alienation is not capable of being spread by mere imitation or suggestion.

The *folie à deux* is occasionally seen, two or three, but never more, members of the same family being afflicted. These rare cases of so-called psychic infection are only observed where individuals are in constant communication with insane patients. Thus, two friends occupying the same room, two members of the same family, more especially two brothers or two sisters or a brother and a sister, sometimes become insane almost at the same time. A similar misfortune has occasionally been known to afflict both husband and wife. Such forms of mental disturbance never occur except in hereditarily predisposed individuals, and the alienation which results is usually one of the more chronic types. Probably the majority of cases reported as instances of psychic infection are erroneously classified, since in reality no transmission of the disorder has occurred, but it has merely happened that the same etiological factor has been active in both cases. Certainly, the cases of so-called conjugal dementia paralytica are not to be classified in this category.

As the etiology of mental disorders has become a subject for more exact study and investigation, it has been found necessary to define as nearly as possible in each individual case a series of phenomena that are designated as suggestive. As the clinical facts have gradually been gathered together, it has been discovered that not one, but a great variety of conditions may give rise to the manifestations belonging to what is termed

suggestion. To Charcot and his scholars we owe a great debt of gratitude for first taking the investigation of these phenomena out of the hands of those who were actuated by superstition and fear or guided by a merely speculative philosophy. As a result of the influence of the French school, psychologists and alienists began to give this subject the attention it deserved. Unquestionably, many of the great movements in religion, politics, and sociology have been the immediate result of the suggestibility among races, nations, or sects. The persecutions in the Middle Ages of those who were supposed to be possessed, the burning of witches, and in more modern times Mahdism, Dowieism, Christian Science, the remarkable services and revival meetings of certain religious sects, anarchism, and a host of other social and political fads can be traced to this origin. Friedmann believes that the fundamental psychological defect is not an affective one, but that the character of the representation or the idea in consciousness is the essential dynamic force. Hellpacht[12] affirms that suggestibility may be regarded as an evidence of quantitative disproportion between the emotional state and its expression, the latter being more or less impaired. This disparity is eminently characteristic of the hysterical individual.

In attempting to determine whether a given case is one of so-called *induced insanity* we have to distinguish between a variety of different conditions. In the first place, induced insanity, in the sense in which the term is often used, may be said to be present when alienation develops in an individual who has been for a more or less prolonged period of time in close contact with a patient suffering from insanity. The alienation is of the same type in the second as in the first patient, and continues after the two individuals have been separated. Such examples, however, are but rarely met with.

Much more frequent in occurrence is the second form, in

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[12] Hellpacht, Willy: Analytische Untersuchungen zur Psychologie der Hysterie. Centralbl. f. Nervenheilk. u. Psych., 1903, December, N. F., Bd xiv, S. 737.

which an individual who has exhibited a marked predisposition towards nervous or mental disease shows symptoms of insanity immediately after having been brought into contact with a well-defined case of insanity. This type is well represented in many forms of hysteria or the paranoioid states, as well as in the so-called conjugal insanity where both man and wife suffer from mental depression.

In a third form individuals who have already shown signs of insanity imitate the symptoms of the patients with whom they are brought into contact. This is particularly noticeable in cases of hysteria and dementia præcox.

Finally, normal individuals who have been continuously associated with persons suffering from mental disease occasionally acquire certain idiosyncrasies of character and temperament. Instances of this are not uncommon among asylum attendants and care-takers of insane patients.

SEX.[18]—Difference in sex is generally supposed to play an important part in the pathogenesis of alienation. In the consideration of this question it is essential to distinguish between what may be called the innate differences between the male and female and those that are the result of environment and education. Although a great deal has been written regarding the so-called primary distinctions, very little is definitely known about them, and the problem is one which needs to be much more carefully investigated. Until the years of puberty, however, it may be said that no very marked differences as regards innate mental qualities exist between boys and girls. The fact that from time immemorial it has been the custom to treat the two sexes differently makes it still more difficult to decide what has been inborn in either sex and what has resulted from environment; nor can we expect that the work so far done by the psychologists will give us much aid towards solving the problem. Nevertheless, some little might be learned from a long series of observations, conducted by

[18] Ellis, H.: Man and Woman. London, 1894. Möbius, P. J.: Geschlecht u. Krankheit—Geschlecht u. Entartung. Halle, 1903.

carefully trained observers, upon the development of normal children, under such conditions that the factor of environment could be reduced to the minimum. After puberty, however, in normal types easily recognizable differences in the mental powers of the two sexes develop, but how far these changes are the result of innate qualities and how far the result of environment and training it is impossible to say. The important part that puberty plays in mental development has been recognized by the laity as well as by scientific investigators.[14] Although many important facts have already been brought to light regarding the physical and mental changes which occur in males and females at this period, there are still many points which need further elucidation. Differences in climate, in race, and in social conditions, and a great number of other important factors must be taken into account before it is possible to make any very broad generalizations. The premature onset of puberty, which frequently happens in the Southern races, is certainly of significance in the pathogenesis of various nervous and mental disturbances. On the other hand, the delay of puberty points to retarded development, and inasmuch as the growth of the individual depends upon so many various factors, it becomes apparent that the discussion of this whole question involves the consideration of a series of complex problems, for the solution of which the mere appearance or absence of certain sexual characteristics offers nothing final. The physical changes that are associated with puberty are largely influenced by the general nutrition of the individual boy or girl, and any deficiencies in metabolism are apt to be followed by retarded or faulty development. Nothing is more common in anæmic girls than to find that the period of puberty has been delayed. Unfortunately, the laity and even physicians too often attribute the various forms of nervous breakdown which occur at this time solely to the absence of the menses, whereas

[14] Marro, A.: La puberté chez l'homme et chez la femme, etudiée dans ses rapports avec l'anthropologie, la psychiatrie, la pédagogie et la sociologie. Traduit sur la deuxième édition italienne par J. P. Medici. Bibliothèque des sciences anthropologiques, i. Paris, 1902.

in reality the amenorrhœa is merely one of the symptoms of a general constitutional disturbance.

At this period, when the diverging sexual characteristics are becoming fully developed, the influence of heredity, alcoholism in the parents, of poverty, malnutrition, and affective disturbances become of even greater importance than they have been before, especially as regards the development of the mental functions. We not infrequently meet with emotional disturbances of varying degree which may ultimately give rise to nervous and mental symptoms of considerable significance. The exact causes of these anomalies are not definitely known, but alienists have long been accustomed to speak of the puberty psychoses or of the insanity of adolescence as if there were specific forms of alienation occurring at this period.

Between the years of puberty and the time when the woman is no longer capable of bearing children she is much more predisposed to mental disturbances than the average man. This condition of affairs naturally depends upon the nervous and mental disturbances associated with pregnancy and parturition, or, on the other hand, with sterility and its underlying causes. A similar predisposition also becomes manifest at the approach of the menopause, although it must be insisted that the real tendencies towards mental breakdown that exist at this time are greatly intensified by the promulgation of popular beliefs and superstitions which have little foundation in fact. It is a matter of clinical experience that, as a rule, a woman is more predisposed towards mental depression than a man. Nor is this unnatural when we take into consideration the fact that she has less independence, and if obliged to earn her living has greater difficulties to overcome. This explanation, however, offers only a partial solution of the phenomena.

In cases of manic-depressive insanity, as a rule, it may be said that the periods of depression are longer and more intense in the female than in the male, whereas the symptoms of excitement and exhilaration are less frequently met with. In other psychoses we also encounter certain differences in the type of the disease which seem to bear some relation to

sexual differences. For example, in dementia paralytica the classical type of the disease is almost never met with in women, in whom it appears almost always in the depressed form. As a matter of fact, this disorder is comparatively infrequent in women, especially those of the higher classes, the majority of female paretics coming altogether from the lowest elements of society.

AGE.—The great majority of cases of alienation come on during the prime of life at a period when the individual is exposed to the greatest stress and strain. Nevertheless, besides the defect psychoses, various acute, subacute, and chronic mental disorders are sometimes met with even in very young children. Thus, hysteria is not very uncommon in the very early years of childhood, and competent observers have reported delirious states occurring during infancy. Every teacher in the public schools meets with children, even among the very young, who show marked anomalies in conduct, and who are generally regarded as bad characters or as more or less incorrigible delinquents and a menace to their fellow-scholars. These children are sometimes referred to by medical writers as degenerates or mentally ill-balanced.

In addition to the hysterical states the psychic epilepsies are not at all uncommon in young children. Thus, Pick [45] has recently called attention to an important psychoneurosis occurring in the earlier years of life which has certain characteristics suggestive of epilepsy, and says that the children afflicted in this way show symptoms of so-called wandering mania (poromania or dromomania) associated with signs of episodic emotional irritability, mental dulness, wilfulness, and impulsivity. In addition to states characterized by the more pronounced symptoms of alienation we meet with a variety of manifestations which should at once lead the physician to suspect the existence of anomalies in the functioning of the central nervous system. We are often told that an individual, who later

[45] Pick, A.: Ueber einige bedeutsame Psycho-Neurosen des Kindesalters. Halle a/S., 1904.

has shown symptoms of alienation, was unusually bright during the earlier years of life, whereas, as a matter of fact, observations which have been made upon this point in nowise confirm the correctness of this popular opinion. Healthy boys and girls are far more apt to show exceptional mental qualities than those who later in their careers break down mentally (Thorndike).

From the onset of puberty until the first symptoms of old age begin to make their appearance the number and variety of mental diseases increase greatly, largely because during the prime of life the individual is subjected to the severest tax upon his mental as well as upon his physical powers. The conditions which in women during this period are particularly apt to give rise to mental breakdowns are referred to in another section. In males we find a great difference in the incidence of the several types of alienation. Thus, men from about 35 to 50 are much more subject to general paresis than at any other period of life. As old age comes on the types of mental disorders are different from those in earlier life, since they are associated with certain degenerative changes in the central nervous system that are apt to lead to the production of a more or less characteristic group of clinical symptoms belonging more particularly to forms of the so-called senile alienation. The relative frequency of incidence at the various ages will be considered in fuller detail in the discussion of the several groups of mental diseases.

Education.—If a training in pedagogics gave teachers a clearer and more practical insight into actual life as well as some appreciation of the beginning pathological tendencies of humanity, many failures would be avoided and many difficulties would be overcome (Von Krafft-Ebing). The instances in which a profession ill adapted to the individual capabilities is chosen would be less frequent, and thus the mental life of numbers would be preserved intact. There is probably no greater fallacy than to regard the education given in our public schools as a cure-all for the many deficiencies of our social and political system. Unquestionably, much good may be accom-

plished in the attempt to educate the masses, provided some selection is made in the choice of those who are to be given the advantages of a school training. That the enormous increase of nervous and mental diseases, one of the most serious menaces to the public welfare, is the immediate result of trying to educate numbers of individuals whose central nervous systems are functionally unable to withstand the strain imposed upon them, is obvious to all those who are competent to judge of such matters. If the aid of intelligent physicians were sought in determining the question as to what children were fitted to receive a public school education, unquestionably many cases of insanity which develop later in life would never occur. It is a curious comment upon popular government that so little effort is being made along these lines, and that, while the public has the right to prevent the spread of measles or scarlet fever, it assumes no authority in matters relating to the prevention of alienation. Only in certain Continental cities is any effort being made to limit the advantages and risks of education in the public schools to those who have sound bodies and sound minds, and nowhere have these questions received the attention they deserve.

The first duty of the educator should be to determine the latent capacity of the individual and then adapt the training as far as possible to meet the needs of the developing nervous system. To render it possible for an individual who is physically and mentally unfitted for the stress associated with the effort to undertake the acquirement of what is termed a liberal education should be regarded as an offence against the public health and morality no less culpable than if one were to deliberately place him in an environment where he is exposed to an infectious disease. What particular form of education is best adapted to the average child? How far should the negro be carried in his schooling? Of what degree of mental activity is woman capable without impairing her physical vigor? These are not questions that can be solved by mere amateurs, but involve problems calling for the earnest consideration of those who are at least familiar with the methods of investigating the

difficulties connected with the functional activity of the central nervous system.

It is much to be regretted that some of the ill-directed zeal which seeks to impose needless restrictions upon proper experimentation upon the lower animals cannot be directed into channels where it will serve to prevent educational faddists from inflicting irreparable injury upon the brains of those who are intrusted to their care. Quite as much technical skill and experience is required to form a correct estimate of the functional capacity of the brain as to determine whether the heart or lungs are normal; and the ignorance upon these topics displayed by those who are supposed to be authorities upon questions of education is greatly to be deplored.

Fatigue.[16]—Recent investigations have shown that the manifestations grouped under this term are varied and exceedingly complex. The mental and physical anomalies commonly described as evidences of fatigue are only in part the result of long-continued activity, since other factors are almost always present. These symptoms vary considerably, not only in different persons, but in the same individual under different circumstances. The mental symptoms of fatigue may be described as a weakening of the attention, a lowering in the processes of associative memory, and disturbances in organic sensibility of an anæsthetic or more generally of a paræsthetic nature. The work of Weygandt[17] as well as that of Aschaffenburg, of Patrick and Gilbert,[18] of Mosso,[19] of Binnet and Henri,[20] Joteyko,[21] Mainzer,[22] as well as of other investigators,

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[16] Fatigue, Mental and Physical, with Bibliography. Dictionary of Philosophy and Psychology. Baldwin. New York and London, 1901. vol. i, p. 374.

[17] Psychologische Arbeiten, 4, 45.

[18] Psychological Review, September, 1896.

[19] La fatica, 1891.

[20] La fatigue intellectuelle, 1898.

[21] Joteyko, J.: Fatigue. Dictionn. Physiol., Charles Richet, Paris, 1903.

[22] Stoffwechselstudien über den Einfluss geringer Thätigkeit und gestörten Wachens. Monatsschr. f. Psych. u. Neurol., 1903, Bd. xiv, H. 6, S. 442.

has already thrown considerable light upon the genesis of this somewhat complex group of phenomena. In the light of these investigations an attempt has been made to study the development of the symptoms in various psychoses in which fatigue is supposed to be an important etiological factor. So far, however, the results obtained have not been entirely satisfactory, as it has been impossible to analyze all the various factors which must be taken into account before any trustworthy deductions are drawn, and consequently any attempt to differentiate the fatigue psychoses from other forms of alienation can not at present be satisfactory. The work of Hodge and others showed that after excessive fatigue it was possible to demonstrate in the ganglion cells of the central nervous system changes which were supposed to be more or less specific. More recent investigations, however, seem to render it highly probable that the effect of fatigue upon the nerve-elements is, largely at least, indirect, and comes about through the production of an autointoxication. Not a few investigators have made an attempt to determine exactly the character of the toxins formed during the fatigue process, but as yet the results are meagre and unsatisfactory. Rauke, as long ago as 1865, suggested that the change in the character of the muscular contractions might be due to the heaping up in the system of toxic products, a view which more recently has again been advocated by Mosso, Schiff, and others. Weichardt[24] conducted a number of experiments upon mice to determine, if possible, the existence of a blood-serum containing toxic products the result of fatigue. He found that no definite results follow the intraperitoneal injections of the blood-serum of fatigued mice as compared with the injection of that taken from normal animals. In both series of cases fatal results followed the injection. Practically the same results followed intravenous injections except that after the normal as well as the serum from the fatigued animals fat embolism resulted. These results were

[24] Ueber Ermüdungstoxine und deren Antitoxine. Münch. med. Wchnschr., 1904, Januar, Nr. 1, 51. Jahrg., Erste Mitteilung.

still further confirmed by observations upon rabbits and guinea-pigs. After considerable difficulty somewhat more positive results were obtained by experimenting with the muscle of animals which had been previously subjected to fatigue. Here it was found that if the muscle-plasma of very much fatigued animals was injected subcutaneously, death resulted after a period varying from twenty to forty hours. It was further noted that no fatal results followed when the plasma, before being injected, was placed in a thermostat for two hours at a temperature of 56° C., whereas the plasma which was not warmed but was allowed to stand for forty-eight hours increased greatly in its toxicity. Nevertheless, after being preserved for eight days in the ice-chest with the addition of toluol it had practically lost its toxicity. Weichardt was further able to demonstrate that by intraperitoneal injections of the toxic muscle-plasma obtained from fatigued animals an antitoxic serum could be derived which apparently neutralized the toxins produced by fatigue.

Trauma.—The importance of trauma as an etiological factor in the production of alienation has long been recognized, although physicians have differed essentially in regard to the relation of the injury to any special type of psychosis. Gradually it has been generally concluded that there is no specific psychosis resulting from trauma, although a few clinicians still describe a symptom-complex which they call a post-traumatic dementia. About all that can be said upon this point is that trauma is a predisposing factor to alienation, and that as a result of a blow upon the skull the brain may become a *locus minoris resistentiæ*. The difficulty of determining the exact importance of trauma is greatly increased in the case of an individual who previously has shown a marked predisposition towards mental disorder or where a history of lues or alcohol is obtained.

As has often been pointed out, the effect of trauma upon the cerebral functions is essentially different in infants or children from that in adult life. During intra-uterine life or at the time of labor the skull may be subjected to mechanical

injuries, as a consequence of which hemorrhages from the cerebral vessels may result with destruction of the cortical tissue and the production of porencephalic areas, atrophy of the hemispheres, or irregular development of the cerebral gyri. Fletcher Beach, in examining 810 idiots, found that in 35 cases the injury to the central nervous system could be directly referred to the use of instruments at birth, but also noted that in 216 cases impairment of the psychical functions had followed difficult labor without instrumental delivery. Kuntzel in 500 cases of idiocy estimated that in 8.9 per cent. forceps had been used; whereas in 4.5 per cent. a difficult but non-instrumental delivery was a factor of importance.

Wulff [24] called attention to the impairment of the intellectual faculties following trauma occurring either during intrauterine life or at the time of birth, and has traced an immediate connection, in 1436 idiotic children, between the injury inflicted and the following conditions: microcephalus, adhesions between the dura and skull, between the dura and pia, between the pia and brain, pachymeningitis chronica, leptomeningitis, hydrocephalus externus, hydrocephalus internus, atrophy, cerebral sclerosis, and porencephalus.

Sperking and Kronthal [25] were among the first to describe definite histological changes following trauma, consisting in marked sclerosis with local hyaline and fatty degeneration in the entire arterial system, particularly in the spinal cord and brain. In 1897 Koeppen [26] referred to the microscopical changes in the central nervous system following severe trauma and described a clinical symptom-complex characterized by memory defects, irritability, and seizures similar to those of dementia paralytica. This observer believed that these traumatic psychoses could be differentiated from dementia paralytica by the lesser degree of impairment of the intelligence and interference with the functions of speech and a retained pupil-

[24] Allg. Zeschr. f. Psych., Bd. xlix, 1893.

[25] Neurolog. Centralbl., 1888.

[26] Koeppen: Ueber Gehirnerkrankungen nach Trauma. Ref. im Neurolog. Centralbl., 1897.

lary reflex. Bruns affirmed that the presence of a pupillary light reflex was pathognomonic of the traumatic cases. Studies of experimental lesions produced by trauma in animals showed that marked changes were present in the nerve-cells. Muralt has described catatonic changes following trauma. Viedens[87] has carefully reviewed the whole subject, and comes to the following conclusions:

Injuries to the skull in children are often followed by dementia complicated with convulsive seizures. In some cases in which the intelligence is well preserved there may be a degeneration of the moral sense. Injuries directly affecting the central nervous system may produce psychoses in adults who have never shown any predisposition to mental disease; but the more marked the predisposing factor, the greater the tendency towards the development of alienation. The mental disturbances may develop immediately after the injury or after the lapse of an intervening period, during which prodromal symptoms can usually be detected. A specific post-traumatic insanity does not exist, although some of the psychoses following trauma have certain features in common—changes in character, irritability, memory defects, and intolerance for alcohol. Various types of alienation may be referred to this as the inciting cause. There is a remarkable similarity between the clinical pictures of some of the psychic disturbances following injuries to the skull and certain forms which are attributable to alcohol. The pathological changes are rarely characterized by gross lesions. The changes in the smaller blood-vessels are marked. No specific alteration in the ganglion cells has been noted. Rosenfeld[88] has reported 48 cases of hypochondriasis secondary to trauma, and as a result of his investigation affirms that the character and severity of the trauma are not the only factors which determine the clinical features of a post-traumatic psychosis. Psychical abnormalities, such as feeble-mindedness of various degrees or a predisposition to hypochondriacal states, are factors of great importance in the

[87] Arch. f. Psych. u. Nervenkrankh., Bd. xxxvi, H. 3, p. 863.
[88] Centralbl. f. Nervenheilk. u. Psych., Bd. xxvi, Nr. 156, 1903.

etiology. The trauma may merely intensify a previously existing mental deterioration.

Adolf Meyer[57] has suggested the following provisional classification of the cases of alienation following trauma:

(1) The direct post-traumatic deliria with febrile reactions, the delirium nervosum of Dupuytren, which is not essentially different from the mental aberration following operations or injuries, and a condition characterized by coma developing in alcoholic as well as non-alcoholic subjects. And, finally, a more protracted delirious state, with marked tendency to confabulate, which may or may not be associated with alcoholism or senility.

(2) The post-traumatic constitution, characterized by the excessive reaction of the individual to the toxic effects of alcohol, influenza, etc., a certain type of vasomotor neurosis, the explosive diathesis, hystericoid or epileptoid episodes, with or without convulsions, and, finally, a paranoioid state.

(3) Traumatic defect conditions—aphasias, mental deterioration with epilepsy and a terminal deterioration due to progressive alterations of the primarily injured parts, either with or without arteriosclerosis.

(4) Psychoses in which trauma is merely a contributory factor—dementia paralytica, manic-depressive insanity, catatonic deterioration.

(5) A group of traumatic psychoses following injuries not directly affecting the head.

Operations.—Psychoses not infrequently develop in individuals who have been subjected to surgical operations. These post-operative alienations present a great variety of clinical forms, none of which can be regarded as in any sense specific. An interesting study of these cases from a clinical stand-point has been made by Picqué and Briand.[58] In a large percentage of instances, especially in patients who have been operated upon while in a weak physical condition, symptoms

[57] Anatomical Facts and Clinical Varieties of Traumatic Insanity. Am. Journ. of Insan., 1904, January, vol. lx, No. 30.

[58] Archives de Neurologie, Mars, 1903, No. 87.

of neurasthenia develop, but these forms must be carefully distinguished from those in which the symptoms of alienation are marked. To another distinct class belong the deliria which develop soon after an operation and result from septic intoxication. Sometimes, however, symptoms of alienation appear in patients who have recovered from the immediate effects of the operation, and which cannot therefore be referred directly to a toxæmia. In such cases the transitory delirium has to be regarded as an epiphenomenon, the operation, however, being a factor of some considerable etiological importance. Many authorities believe that a post-operative psychosis never develops in an individual who has not previously shown some predisposition to alienation. As a general rule, it may be assumed that the variability in the mentality of an individual and his predisposition to insanity are factors of the greatest importance.

Marriage.—The effects of marriage upon individuals who are mentally unsound are usually far from good. In the more chronic cases, it is true, there is sometimes no material change, but in the great majority of instances marriage is followed by a marked exacerbation of the symptoms, culminating either in an acute outbreak of mania or a profound deepening of the depression, as the case may be. There is an ill-founded and utterly unjustifiable belief current among the laity that many forms of alienation are likely to be benefited by marriage, and, unfortunately, not a few members of the medical profession have been known to recommend this step in the hope that some improvement might follow. Such a procedure can not be too strongly condemned. The literature contains not a few references to outbreaks of alienation immediately following marriage—the so-called nuptial insanity; and Kraepelin in his text-book has classed the majority of such cases either among the manic-depressive insanities or the amentias. Obersteiner [21] distinguishes two groups of cases: (1) Those in

[21] Ueber Psychosen in unmittelbarem Anschluss an die Verheirathung (Nuptiales Irresein), Jahrb. f. Psych. u. Neurol., Leipzig u. Wien, 1902.

which a previous existing alienation is made more pronounced and first becomes recognized by the physician immediately after marriage. (2) A group of cases in which the symptoms apparently develop primarily. Most of the cases in the second group occur in nervous run-down females, nearly always between the ages of 19 and 27. The immediate cause is undoubtedly in part due to the sexual excitement following marriage, although Obersteiner rightly says that several other factors must also be taken into account. Although the majority of these cases have been noted in women, nuptial insanity occasionally occurs in men. Thus in one of our male patients, whose history is given later on, marriage preceded the outbreak of an attack of dementia præcox. In the clinical examination of these cases it is important to determine whether symptoms of alienation have not existed in a mild form before the actual outbreak of the more acute manifestations. The forms of alienation are varied. In one or two instances acute or subacute confusional delirious states have been reported from which the patient recovered completely.

Pregnancy and Parturition.[22]—The old writers were in the habit of speaking of puerperal manias and puerperal melancholias, as if these mental disturbances were in a sense to be regarded as entities. Recent clinical investigations, however, have clearly shown that while pregnancy, parturition, and lactation may be regarded as inciting causes, they are in no sense to be associated with a specific form of alienation, and that the mental disturbances cannot be differentiated by any specific symptoms from those of other psychoses. It is now generally conceded that practically any form of alienation may begin during pregnancy, the puerperium, or the period of lactation. As regards their relative incidence during these three periods the authorities are not fully agreed, but, making allowance for small differences in percentages, there is a singular unanimity of opinion among both older and later writers that

[22] Klix: Ueber die Geistesstörungen in der Schwangerschaft und im Wochenbett. Halle a/S., 1904. Williams, J. Whitridge: Obstetrics. New York, 1903.

mental disorders make their appearance more frequently during the puerperium than during the period of lactation, and are still more rare during pregnancy. The following statistics cited by Klix may be taken as fairly indicative of these views:

	Pregnancy	Puerperium (within six weeks after labor)	Lactation
Schmidt	17.6	49.3	33.0
Hoche	11.38	46.4	42.18

That normal pregnancy is to be considered a factor of eminent importance in the etiology of alienation is shown by the large number of psychoses which appear in association with childbirth in patients with a bad family history, in the more recent statistics the figures varying from 47 to 32 per cent. Moreover, where a marked predisposition towards alienation exists, the mental break-down is most apt to occur early in pregnancy, less often at full term or within six weeks of parturition, and least frequently during the period of lactation.

As regards the age of the patients, it will be seen that symptoms of alienation appear somewhat rarely in pregnant women before the twenty-fifth year, but then begin to be encountered with increasing frequency, reaching their maximum incidence between the thirtieth and fortieth years. Of the cases developing before parturition the majority come on during the latter half of pregnancy; and as a general rule the earlier the alienation becomes apparent during pregnancy the worse is the prognosis. Most of the post-partum psychoses come on within the first fourteen days after labor, generally between the fourth and the sixth day. Regarding the character of these psychoses and their etiology there is still some divergence of opinion. Some authorities maintain that every form of alienation occurring during labor or the puerperium is immediately the result of an infection, but this sweeping statement must be received with caution. In support of this view is the fact that the psychoses that make their appearance at this time are almost always accompanied with a rise of temperature and various somatic symptoms, which indicate the

existence of an infectious process; and, moreover, there is often a concomitant mastitis, parametritis, pneumonia, etc. But admitting that many of the cases are referable to some form of septic infection, it is a noteworthy fact that some psychoses continue long after the subsidence of the temperature and general somatic symptoms. Fürstner[33] years ago described an acute hallucinatory insanity of parturition, a form of alienation which began with a prodromal period of short duration and was followed by a period of active hallucinosis. Reference is made to this subject under the head of acute delirium and amentia, and under these two groups undoubtedly may be classed a number of the more acute forms of mental disturbance which occur at these periods. The connection of septic processes with the mental disturbances occurring during the period of lactation is a subject which needs to be further investigated. Whenever signs of alienation appear, the possibility of an infection should always be remembered and every effort should be made either to identify or exclude this factor. Moreover, it should not be forgotten that fever and the local septic processes are not always parallel phenomena with the psychic disturbances, and this fact often increases the difficulty of making a diagnosis. As Klix has pointed out, profound disturbances in consciousness appearing at the beginning of labor should at once arouse the suspicion of the existence of a severe septic process or an oncoming eclamptic seizure. The mental disturbances which occur subsequent to the period of lactation do not materially differ from other forms of psychoses and need not be dealt with in detail here.

Anæmias.—In cases of protracted anæmia we meet with changes in the peripheral as well as in the central nervous system. Recently these lesions have been studied in detail for the spinal cord, and similar alterations are said to exist in the brain. Not uncommonly anæmic patients evince a marked irritability, associated with more or less indifference to their

[33] Ueber Schwangerschafts- und Puerperalpsychosen. Arch. f. Psych, 1875, Bd. v, H. 2, S. 305.

surroundings; and although they are apparently hypersensitive for certain stimuli, they fail to respond to others. These patients are apt to be unsympathetic, to take pessimistic views, are decidedly anti-sociable in their inclinations, and nearly all show subjective defects in memory. The cases that have been reported in which pronounced somatic disturbances, such as an unilateral facial paralysis, transitory hemiplegic attacks, aphasic symptoms, the Argyll-Robertson pupil, and disturbances of speech, indicate the action of some etiologic factor other than anæmia.

The recent literature is full of reports of mental disturbances occurring during the course of pernicious anæmias. The psychical symptoms are general impairment of the intellectual faculties characterized by a slight apathy and delay in the motor reactions. In addition to these defects irritability and exaltation have occasionally been mentioned.[34]

The importance of severe anæmia as an etiologic factor in various forms of alienation, as, for example, in certain confusional states, the so-called collapse delirium and amentia, has been frequently emphasized. Pontoppidan[35] and Petren,[36] in addition to the symptoms already enumerated, mention delirious and confusional states which develop in cases of pernicious anæmia just prior to death. Marcus[37] reports a case in which the symptoms consisted in a marked irritability with some exaltation, followed by depression, diminution of the intellectual activities, and, finally, marked somnolence. Later the patient developed symptoms that were similar to those observed in the classical type of paresis. It is probable that these last mentioned manifestations are largely referable to the personal predisposition of the patient towards this particular form of alienation. It is not at all unlikely that the mental symptoms developing in

[34] Marcus, Henry: Psychose bei perniciöser Anämie. Neurolog. Centralbl., 1903, 16 Mai, Nr. 10, S. 453.

[35] Psychiatr. forelæsn. Kjöbenhagen, 1892.

[36] Ryggmärgs förändringar vid pernicös Anämi. Dissert., Stockholm, 1895.

[37] Op. cit.

cases of anæmia depend upon some toxin that acts directly upon the central nervous system.[28]

Fevers and Infectious Processes.—The part played by infectious diseases in the etiology of alienation has been discussed in connection with the fever deliria, and need not be referred to again in the present chapter. The relation of the general constitutional diseases, especially *tuberculosis*, to alienation is also considered elsewhere more in detail. The mental state of tuberculous patients is one that has received careful attention from numerous observers. The old belief to the effect that there is a general euphoria present in certain stages of tuberculosis is an hypothesis which has not been confirmed by careful clinical investigation.[29] The manner of life and a great variety of other conditions in a measure determine the mental state of many tuberculous patients, although a certain degree of hopefulness even in the face of death is not uncommon. On the other hand, it has been frequently shown that various forms of alienation—states of confusion with or without hallucinations, insane ideas, exaltation and depression, motor restlessness, etc.—may be associated with this disease.

The occurrence of tuberculosis in the insane is a matter of very great importance. Fortunately, the hygienic conditions which now prevail in many hospitals for the insane and the introduction of proper clinical methods have resulted in a perceptible reduction of morbidity and mortality from this disease. The attempts that are being made in our asylums to isolate tuberculous patients and to keep them as much as possible in the open air cannot be too highly commended. The great prevalence of tuberculosis among patients suffering from certain forms of alienation—particularly dementia præcox—has attracted special attention.

The relation of *syphilis* to mental disease is more fully discussed in the chapter on alienation associated with organic diseases of the brain. The importance of this etiological factor

[28] Graeter: Berliner klin. Wchnschr., 1901, Nr. 24.

[29] Lemaire: Étude sur la psychologie du phtisique. Arch. de méd., 1901.

can hardly be overestimated. It is commonly supposed that the luetic poison brings about the formation of toxins which have a markedly deleterious effect upon the central nervous system. Individual predisposition also seems to be an important factor in determining the character of the clinical picture. That the ultimate effects of the poison may be long delayed becomes evident in such forms of alienation as dementia paralytica, where the first symptoms are noted, on an average, about ten years after the primary infection.

Although it is highly probable that *defective metabolism* plays an important part in the pathogenesis of alienation, little is known upon the subject. It is only necessary to mention in this connection the forms of alienation following diseases of the thyroid gland, the mental conditions associated with Addison's disease, or the various delirious states following disturbances in the gastro-intestinal tract. Further references to this subject will be found in connection with the discussion of diabetes, gout, and changes in the blood in their relation to abnormal mental states.

The important part played by toxic substances introduced into the organism from without—such as alcohol, morphin, and lead—and the relation that diseases of the spinal cord and peripheral nervous system bear to alienation have been more fully discussed elsewhere under separate heads.

Gout.—Various forms of mental aberration are not infrequent in families whose members are sufferers from gout. Minkowski's[48] studies, however, do not bear out the view that the toxic action of the uric acid, a diminution in the oxidation processes, or an alteration in the alkalescence of the blood is the cause of these symptoms. In fact, he states that all the explanations hitherto advanced are purely hypothetical. The symptomatology of the milder cases is in a measure characteristic. The patients, unless their work is done in the open air, are apt to be irritable and easily fatigued mentally and physi-

[48] Die Gicht. Nothnagel's Specielle Pathologie und Therapie. Bd. vii, Theil III.

cally. In addition to the milder neurasthenic states in gouty families we not infrequently meet with cases of mental depression generally associated with neurasthenic or hysterical manifestations. More marked psychical disturbances, periods of excitement, delirious states associated with marked rises of temperature, have frequently been reported. Of particular interest are the transitory forms of alienation which follow an attack of gout. Berthier [81] collected a number of instances of psychoses in gouty individuals. It is not improbable, however, as Crichton Brown maintains, that psychoses only occur in such gouty individuals as have previously shown a predisposition towards alienation. Some of the psychoses which follow an attack may be either the results of alcoholic or lead encephalopathy or represent true uræmic disturbances. The inclination of certain patients to periods of depression or hypochondriasis associated with their gouty attacks does not necessarily mean that the mental symptoms are specific, since it is evident that the mere presence of pain or disablement might be sufficient to account for these so-called gouty depressions. It should always be borne in mind that gout, no less than any other disease, may be an important factor in the etiology of insanity without being the sole specific cause.

Diabetes and Glycosuria.—The intimate association that exists between diabetes and various disturbances in the peripheral and central nervous system has long been recognized, and nearly all the text-books on medicine give somewhat full descriptions of the many nervous and mental symptoms which may be encountered in diabetic patients. That these disturbances are in part the result of an autointoxication there seems to be little doubt, but the various theories advanced to explain the character of the changes in the tissues are by no means satisfactory. Kussmaul's opinion that the symptoms might be the result of an autointoxication due to acetone has not been confirmed either by clinical observation or by experiments upon animals. Equally unsatisfactory has been the

[81] Annales Médico-psychologiques, Paris, 1869.

hypothesis that β-oxybutyric acid, and not acetone, is the cause of the disturbance. The supposed acidity of the blood, which was regarded as the immediate cause of the symptoms, has been practically negatived by the observations of Klemperer and others.

The disturbances of the functions of the brain which may occur during diabetes are manifold. A mild form of depression with lack of initiative, extreme mental and physical fatigue following slight exertion, and a considerable degree of intellectual torpor are not infrequently noted. The condition known as narcolepsy—the patient showing a marked tendency to fall asleep at all times—should also be mentioned. Sometimes the periods of depression are broken by states of motor restlessness and some degree of exhilaration, and occasionally we meet with periods of delirium, such as that recorded in the following history, to which my attention was called by Dr. Fatcher. This patient suffered from active fallacious sense perceptions, and his case is also of interest in that it shows the difficulty that sometimes exists in the diagnosis of these conditions.

Johns Hopkins Hospital, Medical No. 9526. General No. 24955. Male, aged 48. German. Clerk in commission house. Admitted December 10, 1898. Discharged January 16, 1899. Improved. Diagnosis: Diabetes mellitus.

Family History.—Negative.

Personal History.—On account of the patient's mental state the history was obtained from his friends and was, therefore, somewhat unsatisfactory. No history of previous severe illness was obtained, except of a malarial attack lasting two months, a year before admission. As a young man he was somewhat dissipated, but during the last three or four years he has been more temperate. There is a history of chancre, but that of a secondary eruption is indefinite. Recently the patient has been suspicious of his wife receiving attention from other persons, but whether any grounds for these ideas existed is not known.

Present Illness.—In January, 1898, the patient had an attack similar to the present one and has never been quite well since. At that time a diagnosis of Bright's disease was made by his physician. Eight days prior to his admission to the hospital the patient began to complain of headache and dizziness. These symptoms were soon followed by disturbances in consciousness and on the day before admission by illusions. For three or four days prior to admission the patient was very drowsy and slept a great deal of the time.

Condition on admission. Well built man. Respiration slow and labored, very irregular in rhythm and fulness. Face quite blue, cyanosis also marked in hands and fingers. Pulse 100 to the minute; of small volume; tension higher than normal. Eyes: Pupils react equally and readily to light and accommodation. Lungs: Nothing abnormal. Heart: Area of cardiac dulness diminished. The second aortic sound is accentuated. While the patient was being conveyed from the dispensary to the ward he fell asleep in a chair and could not be aroused. Later, on the same day, his appearance was suggestive of diabetic coma. A specimen of urine drawn through the catheter was very acid, specific gravity 1037, showed a faint trace of albumin, 6 per cent. of sugar, and an abundance of urates. On December 13 the patient became actively delirious, boisterous, and had illusions relating, as a rule, to his former profession. Diacetic acid and acetone were found in the urine. There was no β-oxybutyric acid in the fermented urine.

On December 16 the patient was less delirious, but on the 17th it was necessary to place him again under restraint. On the 21st it was noted that his condition still remained unchanged.

January 1: The patient became much more tractable and was able to talk slowly and fairly rationally. January 2: The urine was free from sugar and acetone, but at midnight he became wildly delirious, jumping up in bed, talking irrationally, and at times being very maniacal. Next morning (January 3) the patient was again quiet. January 4: Sugar had reappeared in the urine. January 6: The patient was perfectly docile and tractable. On January 9 he had an attack of violent excitement. On January 14 there was a sudden rise of temperature to 103.2° F. On the 16th he was somewhat quieter and was removed at the request of his friends to his home. No further notes on the condition of the patient could be obtained, but it was discovered that he died at some date (not known) previous to January, 1905.

Another important group of mental cases, sometimes noted in connection with diabetes, are those described by Landenheimer [42] as instances of pseudo-paresis. In these forms the disturbances in the attention, defects in associative memory, occasional interference with the functions of speech and locomotion, various peripheral paralyses, and impairment of the light reflexes render the differential diagnosis from true paresis exceedingly difficult. Generally, however, they can be identified on account of the improvement in the symptoms following the disappearance of the sugar from the urine.

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[42] Arch. f. Psych., xxix, 2. Berl. klin. Wchnschr., 1898, 21.

Cardiac and Vascular Disease.[83]—Disturbances in the circulation are not uncommonly followed by or associated with anomalies in the mental life. Maudsley long ago advanced the interesting speculation that were the heart of one man placed in the body of another the exchange would probably not seriously interfere with the circulation of their blood, but might make a real difference in the temper of their minds; and this hypothesis would seem to receive daily confirmation from the observations in the clinic. As Head[84] has shown, the mental changes associated with anomalies in the heart's action may be caused by variations in the cerebral blood supply, since we often encounter a delirious condition associated with cardiac insufficiency or with changes due to altered vascular conditions. Mental disturbances may be the immediate result of the anomalies in circulation, or may develop secondarily by lowering the resistance of the organism so that the effects of such toxic substances, as alcohol or the products of autointoxication, are less easily combated.

These abnormal mental states connected with disturbances in the cardiac functions vary greatly in severity as well as in character. In the milder forms they are limited to slight changes in the organic sensibility, and the patient merely becomes aware of the increased or irregular cardiac action, his consciousness of it rendering him depressed and restless. In other states the depression is more marked; the individual

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[83] D'Astros: Étude sur l'état mentale et les troubles psychiques des cardiaques. Thèse de Paris, 1881. Mickle, J.: On Insanity in its relation to Cardiac and Aortic Disease. London, 1888. Farcourneau: De la folie d'origine cardiaque. Thèse de Paris, 1900. Huchard: Le cerveau cardiaque. Bull. méd., 1891. Dobrowerski, S.: Les maladies du coeur comme cause des psychoses. Conférence à la clin. nerval. de Pétersbourg, 10 Decembre, Vratch, 1899, p. 318. Fischer, J.: Ueber Psychosen bei Herzkranken. Allg. Ztschr. f. Psych., Bd. lv, H. 6, S. 1060. Eichhorst: Deutsche med. Wchnschr., 28 Juni, 1898. Langdon, F. W.: Cardio-vascular and Blood States as Factors in Nervous and Mental Disease. Cincinnati Lancet-Clinic, May 7, 1904. Gamble, Cary B.: Johns Hopkins Hosp. Bull., vol. xv, 1904.

[84] Certain Mental Changes that accompany Visceral Disease. Brain, Part III, 1901, p. 346.

begins to be suspicious, sometimes only of certain individuals, although in other cases this feeling is more general. Not infrequently hallucinations are noted in the milder cases, which, however, are generally recognized by the patient as fallacious sense perceptions. At first they are apt to be vague in character and ill-defined, but as the trouble increases or as the ideas become more persistent, the appreciation of their fallaciousness may be lost. In some cases, instead of depression, a state of exaltation or exhilaration is met with. The importance of these circulatory anomalies in cases of mental depression and apprehensiveness has been more fully investigated by Reinhold,[45] and the subject will be again referred to when we come to discuss senile melancholia. Acute dilatation of the heart has often been noted in several of the more acute psychoses, particularly the febrile deliria and the acute delirium and amentia. Recent observations go to show that cardiac changes of some importance may take place during the acute onset of some of the chronic psychoses, such as dementia præcox, manic-depressive insanity, and dementia paralytica. In the last, as well as in other conditions, marked changes in the cardiac muscle are relatively common. The mental disturbances connected with disorders of the vascular system are referred to more in detail in the discussion of arterio-sclerosis as well as of certain other morbid conditions—alcoholism, general paresis, the senile psychoses, and others—which are often complicated by marked arterial changes. Evidences of changes in the superficial circulation are frequently met with in insane patients. Thus, in cases of dementia præcox the patients have a peculiar pasty appearance and at times a more or less pronounced degree of cyanosis. In the maniacal states we encounter manifestations pointing to the existence of a relaxed vasomotor condition. Thus a pronounced degree of dermatographia is not uncommon. The relation of the blood-pressure to the various mental states has lately been the subject of painstaking study, but the results thus far published are

[45] Münch. med. Wchnschr., 1894, 16.

still open to criticism, and all of these observations must as yet be accepted with caution. Dunton,[46] who conducted his experiments on the changes of blood-pressure in relation to states of depression and excitement with the greatest possible care, admits that the instrument with which the observations were made did not give results which he could regard as entirely reliable. Indeed, the data obtained are so uncertain that the blood-pressure records can not, as a rule, be accepted as affording any definite indications for treatment. In a general way, however, it may be said that the evidence so far accumulated points to the existence of a subnormal blood-pressure in states of excitement and an increase in states of mental depression. Of course, where other additional factors have to be taken into account the results are even more unsatisfactory.

Mental Disturbances in Hepatic Disease.—Disturbances in the hepatic functions are not rarely associated with or followed by aberration.[47] A full review of this subject by Ballet,[48] with bibliography, has recently appeared. The recorded mental symptoms furnish a great variety of clinical pictures, of particular importance being the states of somnolence and stupor that not infrequently develop during the terminal stage of hepatic disease. In the milder cases the faculty of attention becomes defective; actual distractibility, the result of increased sensory impressionability, is not marked, but the patient seems unable to direct his mental energies persistently for any given length of time in one direction. In other words, the attention is not actively diverted, but as the result of the lethargic condition simply lapses. In another group of cases where marked disturbances in the hepatic functions were noted, the patients were more or less excited and showed evidences of speech compulsion, psychomotor excitability, auditory and visual hallucinations, and more or less indefinite and unstable insane ideas.

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[46] Some Observations upon Blood-Pressure in the Insane. Trans. of American Medico-Psychological Association, 1903.

[47] Delaye and Foville: Nouveau Journ. de méd., 1821, Septembre.

[48] Ballet: Traité de la pathologie Mentale, Paris, 1903, p. 478.

Such cases are not to be regarded as the result of hepatic disease by itself, but of a series of complications. After a period of brief excitement the patient may pass more or less rapidly into a state of stupor which generally ends in death (delirium, coma hepaticum). The hepatic stupor or coma is far less apt than the uræmic or diabetic form to show evidence of remission, and a complete recovery seldom, if ever, occurs.[48] When the excitement is of a mild grade and deep stupor does not intervene, the psychic anomalies may persist for weeks or months, after which the patients may gradually recover.

Temporary mental disturbances are not infrequently noted after operations upon the common bile-duct. Dr. J. M. T. Finney informs me that in the records of 100 operations upon the biliary passages the occurrence of a peculiar transitory delirium has been noted in about 10 per cent. of the cases. These mental disturbances develop during the course of convalescence after the bile-passages have been drained, and are apt to run rather a characteristic course, frequently lasting a fortnight and then disappearing without leaving any residuary mental disturbances. The severity of the condition varies from a mild temporary aberration, accompanied by dizziness and peculiar sensations in the head, to a wild delirium. As a rule, the nocturnal exacerbations are marked. The first symptoms of mental aberration generally appear about the end of the first week after the operation, and consist in a slight dizziness or dull feeling, frequently accompanied by mental depression, confusion of ideas, hallucinations, both visual and auditory, and various forms of delusions. The symptoms often develop at the time at which the bile begins to leak around the drainage-tube and flow over the surface of the wound, at this time unprotected by granulations. It may be said that the development of the mental anomalies seems to bear some definite relationship to the activity of the kidneys, inasmuch as at the time of the delirium some diminution in

[48] Quincke u. Hoppe-Seyler. Die Krankheiten der Leber. Nothnagel's Spec. Pathol. u. Therap., Wien, 1899.

the amount of urine passed and the presence of albumin and tube-casts have generally been noted.

Finney believes that the following conditions play an important part in the pathogenesis of the delirium:

(1) An abnormal condition of the bile due to derangement of the hepatic functions.

(2) A possible absorption of toxic products from the presence of bacteria.

(3) A predisposition to nervous and mental disturbances, causing an increased susceptibility in the abnormal reactions for certain toxic products.

Undoubtedly many of these symptoms referred to are the result of an intoxication due to the accumulation in the system of substances the result of imperfect metabolism. It is difficult to differentiate the pure, uncomplicated cases of hepatic disorder from those in which such etiological factors as alcoholism, syphilis, or tuberculosis are added.

The *prognosis* depends in a measure upon the nature and extent of the disease. The toxic products that cause the symptoms may be derived from more than one source, and are either manufactured directly by the liver or absorbed from the intestinal tract. Pathological changes in the liver are noted in many of the psychoses.

Nephritis.[30]—Disturbances in the functioning of the kidneys are frequently found complicating the course of various psychoses and have been made the subject of a special study by numerous investigators. Although some authors maintain that there is a specific form of alienation associated with Bright's disease, the evidence adduced is far from conclusive. The abnormalities in the urinary secretion, found

[30] Hagen: Des maladies des reins considérées comme causes d'aliénation mentale. Allg. Zischr. f. Psych. u. psych.-gerichtl. Medizin, xxxviii, 1. Rouvat: Essai sur l'urémie délirante. Th. de Lyon, 1883. Dieulafoy: De la folie brightique. Soc. méd. d. hôp., 10 Juin, 1883. Contrib. à l'étude clin. et expérim. de la maladie de Bright sans albuminurie. Soc. méd. d. hôp., 11 Juin, 22 Octobre, 1886. Raymond: Sur certains délires simulant la folie survenus dans le cours des néphrites chroniques. Arch. gén. de méd., Mars, 1882.

associated with psychoses, in the vast majority of cases are to be regarded as the result rather than the cause of the alienation. The delirium that occurs in uræmia has certain specific characteristics which are fairly distinctive, but even in this connection it is scarcely permissible to speak, as do certain of the French writers, of a specific uræmic delirium. Although the urine has been carefully examined in a great variety of psychoses, no very definite results have been obtained. After careful analyses in a large number of cases of recurrent mania and melancholia Pilcz was able to arrive at the following not very satisfactory conclusions: In many individuals, who during the period of remission showed no abnormal condition of renal secretion, at the time of the attack the urine contained a variety of abnormal chemical constituents, but the results of the analyses did not in any sense show anything specific of the condition. It was, however, found that the characteristics of the urine during a given period of either excitement or depression were fairly constant for the same individual.

Gastro-intestinal Disturbances.—Regarding the disturbances in the gastro-intestinal tract and their relation to forms of alienation very little is known. That the former are frequently associated with various forms of mental disorders is a matter of common clinical experience, but the relation that they bear to the alienation is a matter of conjecture. Von Wagner[51] assumed that in certain forms of acute mental disease there was an autointoxication due to defective metabolism; and the same observer was able to demonstrate the increase in the urine of indican as well as of acetone. In the case reported by Raimann[52] the symptom-complex resembling Korsakow's syndrome was noted in a patient who died and in whom at autopsy were found multiple lymphosarcomata of the small intestine. A few other cases somewhat similar in char-

[51] Ueber Psychosen durch Autointoxication vom Darm aus. Jahrb. f. Psych., 1902, xxii. 177.

[52] Raimann, Emil: Ein Fall von Cerebropathia psychica toxaemica (Korsakow) Gastrointestinalen Ursprunges. Monatsschr. f. Psych. u. Neurol., 1902, October, Bd. xii, H. 4, S. 329.

acter have been reported in the literature. That there is a marked defect in the functions of the stomach and intestines in very many cases of alienation is a matter of common clinical experience, as, for example, in cases of dementia præcox and manic-depressive insanity. Moreover, milder forms of mental depression, such as hypochondriasis, are not uncommonly noted in connection with gastro-intestinal disturbances.

Migraine.—Not infrequently attacks of migraine are complicated by elementary psychic disturbances.[33] In such cases it is not improbable that the symptoms of mental aberration are indicative of the existence of a complicating neurosis, such as epilepsy or hysteria gravis, and are not in any sense specific. Von Krafft-Ebing, referring to the occurrence of attacks of migraine in individuals who are subject to epilepsy, says that in these cases we have to do with an ophthalmic or sensory disturbance of the Jacksonian type, in which the visual auræ precede the attack. These cases are not infrequently referred to as instances of epileptic migraine or migrainous epilepsy. The psychical disturbances are usually transitory. In some instances attacks of migraine seem to be associated with hysterical seizures, and, as von Krafft-Ebing has pointed out, the converse may also be true. In rare cases, together with the pain, definite visual hallucinations are present. The amnesic aphasia, that frequently occurs, may last from a few seconds to half an hour. Paræsthesias associated with hemicrania are sometimes met with. During the attack there is some disturbance of speech and a diminution in the pupillary reflexes. Severe psychoses, however, are not common, a fact which von Krafft-Ebing thinks is indicative of their etiological complexity, although Mingazzini and Pacetti hold a contrary opinion [34] and believe that the hysterical symptoms in all cases are to be regarded merely as complications.

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[33] V. Krafft-Ebing: Arbeiten aus dem Gesammtgebiet der Psychiatrie und Neuropathologie. Heft 1. Ueber Migränepsychosen. Jahrbücher f. Psych. u. Neurol., Bd. xxi, H. 1 u. 2, 1902.

[34] Riv. sper. di freniatria, 25, fasc., 2, 3, 4.

The defects in memory vary in intensity from the milder to the more severe amnesias.

Mental Disturbances in Chorea.—Not infrequently in cases of Sydenham's chorea symptoms of mental aberration appear and are characterized by emotional irritability and rapid changes in the mood. Attention was originally directed in detail to these disturbances by Marcel,[85] although references to the subject of even an earlier date[86] are found in the literature.

In addition to the above-mentioned psychic anomalies, choreic patients frequently suffer from various kinds of obsessions, while in the protracted cases the various forms of psychic tic are apt to develop. This latter symptom shows itself in an uncontrollable impulse to perform certain acts, to touch objects, to count, etc. The mental aberration in these cases is of all gradations, from the milder forms of psychasthenia to much more profound disturbances. These patients are, as a rule, markedly impressionable and exceedingly capricious, being turned about by every whim. They become moody, morose, exceedingly depressed mentally, and on little or no provocation change with great rapidity, becoming nervously animated and unduly elated. The defects in the intellectual functions, except in the delirious states, as a rule, depend upon the lapse in memory and attention. The consciousness of their nervousness makes these patients at times appear indolent and lazy. In some cases[87] there is a marked transitory state of confusion, associated with great motor restlessness, and during this period fallacious sense perceptions are common. Visual hallucinations not infrequently occur, particularly just before the patient falls asleep, and are apt to be more or less terrifying in character, the forms assumed being those of horrible-looking animals, people, etc. These may persist, and during sleep the patient may suffer from nocturnal terrors. Visual hallucinations are the most common, but the visual, haptic, and erotic

[85] Mémoires de l'Acad. de Médecine, 1853.

[86] Plat, 1614.

[87] Möbius: Neurolog. Beiträge, H. 2, S. 129 ff. Münch. med. Wchnschr., 1892, Nr. 51 u. 52.

forms also occur. In a few cases the patients pass into a stuporous state. Zielen, under the head of choreic psychic changes, describes these milder forms of aberration as typical. Cases occurring during pregnancy (chorea gravidarum) are characterized by great severity of the motor disturbances and by periods of intense excitement and exhaustion. In some instances the disease is complicated by hysterical symptoms and not rarely is a complication of epilepsy.

Bradley[18] has reported a case of chorea insaniens with pathological findings at autopsy. There were marked degeneration of the ganglion cells, "organized mitral vegetations, congested hemolymph glands, arterial hypoplasia, an apparently actively functioning, persistent thymus, and mesenteric lymphatic hyperplasia."

The *treatment* for these cases is that indicated for chorea, in addition to the employment of means for the relief of the mental disturbances: a fluid diet, rest in bed, and warm baths or packs. In cases in which the motor unrest or aberration is very marked sedatives may be employed—paraldehyde, amylene hydrate, trional, etc. These drugs, however, should be used with great caution.

Huntington's Chorea.—In the so-called degenerative chorea the mental changes, as a rule, are much more marked than in the ordinary type. Not infrequently the patients are subject to attacks of depression, which gradually become more frequent, until finally there are no lucid intervals, and in addition the sufferers show a marked degree of mental reduction, becoming apathetic and indifferent. Despite the apathy and intellectual impairment, however, such individuals often show a considerable degree of emotional instability, which manifests itself in frequent outbursts of temper. The memory, as a rule, is greatly impaired. The intellectual defect becomes apparent early in the disease. The rapidity with which it progresses varies considerably. In some cases ideas of persecution, alternating with varying degrees of euphoria, may de-

[18] Am. Journ. Insan., vol. lx, No. 4, 1904.

velop. As Wollenberg[59] has stated, there is no exact parallelism between the mental and the physical symptoms. In cases in which the motor symptoms are greatly exaggerated it does not necessarily follow that the mental impairment is profound. In the case reported by Rusk,[60] which is important on account of the detailed history, choreiform movements had been noted for seven years prior to the appearance of the mental symptoms. Gradually both the physical and the mental symptoms became worse and the patient finally died from an intercurrent complication. Recent autopsies have not confirmed the views formerly entertained that a diffuse interstitial encephalitis exists in such cases. As Rusk points out, there is not sufficient evidence for assuming the existence of an inflammatory condition. The organic lesion consists chiefly in a marked increase of the neuroglia.

The disease, as is well known, has a marked tendency to recur in families. Although it has been said that it generally makes its appearance about middle life, Heilbronner[61] maintains that it shows a tendency to recur in every generation at an earlier period than in the one preceding. The treatment is purely symptomatic.

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[59] Wollenberg: Chorea. Nothnagel's Spec. Pathologie und Therapie. Bd. xii, Theil II, Abth. 3.

[60] Rusk, Glanville Y.: A Case of Huntington's Chorea with Autopsy. Am. Journ. Insan., 1902, lix, No. 1.

[61] Heilbronner: Ueber eine Art progressiver Heredität bei Huntington'scher Chorea. Arch. f. Psych. u. Nervenkrankh., Berlin, 1903, Bd. xxxvi, H. 3.

CHAPTER VIII

THE PRINCIPLES CONCERNED IN A PROVISIONAL CLINICAL GROUPING OF MENTAL DISEASES[1]

ANY attempt to form a provisional grouping of mental disorders, to be successful, must be based upon the consideration of a number of different factors. In the first place, it is of prime importance for physicians to realize that in a study of alienation we are not dealing with definite disease entities, such as typhoid fever or pneumonia, where a direct causal relationship between the exciting etiological factor and the symptoms of the disease is demonstrable. In typhoid fever or meningitis the nature of the morbid process is more or less definite, and the natural history of these and similar disorders has been clearly and accurately described. In a consideration of even the simplest forms of alienation, however, there are so many indefinite and ill-defined factors to be considered that the problems connected with the differentiation of disease types at once become difficult and complex. Before considering definitely the basis upon which an attempt may be made to classify the various forms of mental disorder we shall first point out certain errors to be guarded against. For unless a considerable degree of caution is exercised there is danger lest we not only fail in the attempt to delineate the chief characteristics of the various symptom-complexes in a manner that will be useful in stimulating further study, but also tend to foster the spirit of depreciation and pessimism which renders real progress impossible.

In the introductory chapter attention was called to the fact

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[1] Paton, S.: The Classification of Mental Diseases. Reference Handbook of the Medical Sciences. William Wood & Co., New York, 1902, vol. v, p. 15. Nissl, F.: Kritische Bemerkungen zu Ziehen's Aufsatz: Ueber einige Lücken u. Schwierigkeiten d. Gruppierung der Geisteskrankheiten. Centralbl. f. Nervenheilk. u. Psych., 1904, März 15.

that the purely symptomalogic study of the cases, however admirable it may be in certain respects, can never supply a sufficient basis upon which to attempt a grouping of the various forms of alienation. Such a method of investigation assumes as a necessary postulate that the observation of symptoms is the only important factor in a study of clinical psychiatry. Moreover, it was pointed out that, so little being known with regard to the anatomy and physiology of the brain, any endeavor to form a pathological basis upon which the cases of alienation may be grouped would be equally futile. In this connection should be mentioned the attempt that has been made by Wernicke to differentiate the several disease pictures according to the supposed localization of the anatomical processes in the central nervous system. The fundamental assumption, however, on which this opinion rests—that a similar disease process underlies all forms of mental disturbances in which there are anatomical lesions—amounts to no more than a pure hypothesis. Such a view does not take into account, for example, the demonstrable differences, pathological as well as clinical, that exist between syphilitic lesions in the central nervous system and the changes observed in dementia paralytica, nor between the latter and those belonging to various forms of the senile psychoses. In these instances we have to deal with essentially different disease processes. Unfortunately, however, as yet the alienist has been able to recognize only a few lesions that have certain distinctive characteristics, so that the pathological findings alone cannot supply a basis for classification. Until it is demonstrable beyond peradventure that certain factors in the study of cases of alienation are of specific importance, the only rational and comprehensive method to be adopted is that which takes into consideration all the possible facts bearing upon the case; for the present at least, therefore, this must be regarded as the most natural and the simplest method of grouping the various complexes. Take, for example, the study of dementia paralytica. Here we have a variety of clinical symptoms which in their totality have come to be regarded as more or less specific and are associated with a process running a fairly definite

course, passing into a peculiarly characteristic dementia and ending sooner or later in death. On the pathological side these clinical changes may generally be correlated with certain anatomical lesions. When all these factors are taken into account, we are able to recognize a disease group with certain definite clinical characteristics more or less intimately dependent upon certain changes in the central nervous system.

Such a method of grouping as that which has been indicated can hardly be antagonistic to progress, and is useful in aiding the alienist to formulate his views and to bring into greater prominence many of the problems which need solution. The first group of disorders which will be discussed are those classed as the defect psychoses—idiocy, imbecility, and other degrees of mental debility. The ill-defined character of this group and the empiricism which associates under the same head such a variety of disorders will at once be recognized. Although the severer cases are always associated with marked structural changes of the nervous system, it has been customary to discuss these disorders not with those due to organic brain disease, but to look upon them as forming a group by themselves.

The second group of mental disorders which are considered are designated acute and subacute, confusional and delirious states, in part the result of autointoxication. These include the febrile deliria, the acute collapse delirium, the so-called amentia (Meynert), and Korsakow's syndrome. Although the evidence which favors the autointoxication theory is meagre and more or less indefinite, the possible influence in these cases of toxic products has not been lost sight of, and this grouping, therefore, seems to be one which offers a reasonable working hypothesis. The next chapter deals with certain forms of chronic intoxication caused by various poisons—alcohol, morphin, cocain, lead, etc.

Following this are the groups of manic-depressive insanity and dementia præcox, in which the grouping is based merely on the symptomatology, course, prognosis, and termination, without regard to the pathological findings, which are too indefinite to be considered of any present value.

Then follows the large group of cases of dementia paralytica in which the same factors are taken into account, but here, inasmuch as the changes in the central nervous system are of more or less specific importance, they are given their due valuation. The senile psychoses, including states of depression and excitement, mixed states and dementia, are next considered.

Under the head of epilepsy and hysteria a variety of symptom-complexes are discussed which in the main possess certain distinctive characteristics, but frequently show so many similarities that it is impossible to differentiate the two conditions. In the chapter dealing with neurasthenia and the psychasthenic states we have attempted merely to sketch out, as it were, the outlines of a group which as yet can not be definitely filled in. Here the term neurasthenia is reserved for the pure cases of chronic nervous exhaustion, while the term psychasthenia is applied to the conditions variously designated as the "fear" or "anxiety" psychoses and impulsive insanity, in which, in addition to the ordinary symptoms of nervous fatigue, abnormal impulses, phobias, and various other psychical disturbances form part of the clinical picture.

A separate chapter has been devoted to the consideration of the various forms of mental disorder associated with organic brain lesions, while under the head of the paranoia group are brought together certain chronic conditions which cannot be as yet definitely assigned to any of the symptom-complexes described.

In view of what has already been said, the possibility of the occurrence of combined psychoses may readily be inferred. If, however, the subject of insanity is discussed purely from a symptomalogic stand-point it would be impossible to speak of combined psychoses, as such a conception does not take into account the origin, course, or termination of any of the symptom-complexes nor recognize fundamental differences in the various clinical pictures. Even to the casual observer, however, it at once becomes apparent that in adopting a clinical grouping of disease there is no valid reason why a patient may not present symptoms which point to the possible association of more

than one disease process. There is plenty of evidence to show that hysterical symptoms not infrequently complicate a number of other psychoses: for example, manic-depressive insanity, dementia præcox, general paresis. Apparently v. Krafft-Ebing was the first to use the term "combined psychoses," but as Gaupp[2] has pointed out, a distinction must be made between the combined and the composite (zusammengesetzte) psychoses. The latter, according to Ziehen and Wernicke, are to be regarded as composite conditions entirely void of fundamental distinctive traits. Among the more important of the combined forms is the reported association of manic-depressive insanity with dementia paralytica. Whether or not the former may also complicate dementia præcox cannot be decided positively, as our knowledge of both disorders is largely casuistical. The same is true in regard to the possible association of true manic excitement with various confusional states. Here the difficulty of diagnosis is very great. There can be little doubt, however, that such a process as dementia præcox not infrequently complicates the defect psychoses, idiocy and imbecility, and to observations of this association may be traced the belief entertained by some clinicians that the dementing process is closely related to certain forms of idiocy. The occurrence of hysterical symptoms during the course of alienation following syphilitic infection is not infrequent, and some cases are on record in which it is more than probable that the ordinary course of dementia præcox has been markedly changed by a complicating specific infection. The fact that many of the different forms of alienation do not correspond with the typical pictures may in a measure be accounted for not only by the difference in individual reaction, but also by the possible addition of one mental disease to another. V. Krafft-Ebing and others have called attention to the development of dementia paralytica during the course of paranoia. The senile psychoses and the associated changes in the central nervous system not improbably complicate many other forms of alienation.

[2] Gaupp, R.: Zur Frage der kombinierten Psychosen. Centralbl. f. Nervenheilk. u. Psych., 1903, 15 December, xxvi. Jahrg., Nr. 167, S. 766.

CHAPTER IX

MENTAL ANOMALIES THE RESULT OF DEFECTIVE DEVELOPMENT OF THE CENTRAL NERVOUS SYSTEM[1]

Idiocy, *imbecility*, and *mental debility* represent the three different grades into which these disorders may be divided. This classification, however, is purely empirical. The causes are either congenital or acquired, and are as widely diversified in character as in degree of intensity. In cases of the first category macroscopic as well as microscopic lesions are demonstrable in the central nervous system, while for the second and third group, on account of our limited and imperfect knowledge, there is nothing in the pathology that is tangible.

Idiocy.—From a purely practical stand-point cases of idiocy may be divided into three groups. (*a*) To the first belong the cases in which the defect in the central nervous system is so great that after birth the child lives only for a short period of time and its existence is a purely vegetative one. The study of such cases furnishes a field of fruitful exploration for the physiologist, and an important chapter yet remains to be written by any one who has the opportunity and inclination to make a careful analysis of the functionings of the central nervous system of which such monsters are capable and of correlating the physiological responses with the structural conditions.[2] Already there are a considerable number of observations on record which tend to show that life may persist for a considerable period of time even when all the higher brain-centres are lack-

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[1] Ireland, W. W.: The Mental Affections of Children; Idiocy, Imbecility, and Insanity. Phila., 2d ed., 1900. Bailey, Pearce: Reference Hand-book of the Medical Sciences, vol. v, p. 345, 1902. Starr, M. Allen: The Cerebral Atrophies of Childhood. Organic Nervous Diseases. New York, 1904.

[2] Vaschide: Essai sur la psycho-physiologie des monstres humains. Paris, 1903.

ing. For example, anencephalic monsters not possessing a cerebrum or basal ganglia have been known to survive for more than a week.[3] Spontaneous or mimetic movements in such cases did not occur, although external stimulation was followed in one instance by a bizarre and indescribable reaction of the facial muscles. Cases in which one cerebral hemisphere or the cerebellum and corpus callosum have been entirely absent, and in which life has persisted for some time, have been reported.

(*b*) Of more immediate interest to the alienist are those cases in which the defects in the central nervous system are less extensive. To this second class belong idiots in whom there is almost a complete inability to utter articulate sounds, but who manifest greater complexity and more coördination of movements than is found in those of the first group, and, moreover, give evidence that they possess sensation and some associative memory. Such individuals, however, practically never show a functional development of the central nervous system higher than that seen in infants at the end of the first year of life. As a rule, the diagnosis of such conditions can be made soon after birth. The first evidence may be that an infant shows no desire to take the breast; or about the time when in the normal infant there is some evidence of reaction to a bright light (from the first to the third day) no effect is produced by the incident stimulus. The degree of impressionability to sensory stimulation attained by such individuals varies within considerable latitudes.

The especial symptomatology of individual cases deserves further careful and painstaking study.[4] As a rule, it can be decided that the disturbances in sensation are complex and not dependent upon mere interference with function in the peripheral tract. Although in some instances the latter exists, its presence cannot be made to explain all the sensory disturbances, since it is obvious that there is also a considerable defect in the reception, elaboration, and retention of sensory impressions. As

[3] Anton, G.: Anencephalie und Hemicephalie. Handbuch der Path. des Nervensystems. Berlin, 1904.

[4] Sollier: Psychologie de l'idiot et de l'imbécile. Paris, 1891.

would be expected, all forms of associative memory seem to be affected, and taste, smell, touch, sight, and hearing are more or less seriously disturbed. Sometimes mentally defective infants seem to lack the most elementary organic sensations and are deficient in even the purely animal instincts. Although they may react to both visual and auditory stimuli, the reaction has no meaning for them; they fail to recognize their parents, and never appear to become familiar with the objects with which they are almost continually brought into contact. Their capacity for attention is at a very low ebb. Bright objects held before the infant fail to attract its gaze, and even if the eyes are turned in the direction of the stimulus, one observes only a vacant stare without any objective evidence of association between the sensory impressionability and the visible reaction. The associative processes are very limited. Even the most elementary—those necessary for the development of orientation—are deficient, and such creatures often seem to be unable to appreciate the direction of sounds, rolling their heads about vaguely and seldom turning their eyes in the direction from which these have emanated. Even the elementary emotional reactions—smiling or other expressions of pleasure—may be completely absent. In some instances the power of movement becomes more extensive and incoördination does not develop. In other cases the ataxia becomes less marked, but the movements are clumsy and at times almost choreiform in character.

(*c*) The third group of cases consists of those which up to the present time have received the most careful study and are characterized by a limited power of speech, comprehension, and articulation.[8] In some instances the attempts at articulation are restricted to a few guttural sounds more suggestive of the grunting of an animal than of human speech. But even in cases where neither spontaneous speech nor the comprehension of

[8] Emminghaus: Die psychischen Störungen des Kindesalters. Tübingen, 1887. Sollier: Op. cit. Voisin, J.: L'Idiotie. Paris, 1893. Hartmannberg: Studien über Klinik und Pathologie der Idiotie. Deutsch von Berger, 1895. Stierling, Gustav: Vorlesungen über Psychopathologie in ihrer Bedeutung für die normale Psychologie. Leipzig, 1900.

spoken language is developed, one must be careful to look for the existence of other forms of association, since not infrequently these may have reached a relatively much greater development, which can be detected by observing the movements, the power of expression, and the apprehension of visual stimuli, such as the recognition of cards, pictures, and so on.

In another group of cases, although articulation is restricted to a few words or syllables, the comprehension of signs or spoken words may attain a still higher development, so that the characteristics of simple objects, the nature of the environment, and familiar faces are recognized better than one would at first be led to suspect. In such cases there may be a marked appreciation of physical qualities,—the difference between heat and cold,—of a sense of comfort or discomfort, and even a comprehension of the nature and uses of a variety of ordinary objects. In still another class of cases speech comprehension and articulation have advanced still further. Associative memory is much better developed and the patients are able to pick out different letters or cards; they acquire a wider vocabulary and can associate names with objects. The organic sensations seem to be more complex, the associative qualities concerned in taste and smell are more highly developed. Elementary feelings of pleasure, discomfort, or pain are associated with certain persons, objects, or phenomena. These patients differentiate to some extent between those who are kind to them and those who are not friendly. The dissociation between emotional reaction and ideation is less marked. A slight appreciation of time may develop and an evident familiarity with the environment is often a prominent feature. As a rule, these patients need to be carefully watched. They may be subject to impulsive acts or sudden outbursts of temper. The simple organic sensations predominate, and whatever interest develops is usually that associated purely with the personal needs.

Certain observers have divided their cases into two groups —the anergetic or apathetic form and the erethic or versatile type. In the former the power of directing the attention is in some cases almost absent, and all forms of emotional reactions

are deficient or merely embryonic in character. In patients of the latter group it is possible to attract the attention and affective reactions often follow. To this category belong the individuals who are capable of being trained up to a certain point, and can be taught to some extent to administer to their own wants, to feed, dress, and wash themselves and perform other light duties.

The power of attention may be variously estimated by testing the power to remember cards, pictures, colors, and the more simple characteristics of objects and persons. As Störring has pointed out, the speech development is not proportional to the amount of mentality. Some idiots show a considerable ability to express themselves audibly and name familiar objects correctly, and yet at the same time possess an intellectual capacity much below that of others whose speech is far less developed. Certain of these individuals even attain to the mental status of the ordinary child between the ages of six and eight years—about the time it begins to go to school.

The *physical manifestations* in idiocy are varied and numerous. Those which pertain to the skull and nervous system will be described when we come to speak of the pathology. The disproportionateness in the development of the head, extremities and trunk is often well marked. The teeth are nearly always irregular. Not infrequently the sensory organs show gross anatomical defects. It has been estimated that from 6 to 8 per cent. of these unfortunates are either born blind or become so early in life, while in other cases the peripheral visual tract is intact. Paralyses of the ocular muscles are common. Hearing is sometimes defective, but this is not so frequent an occurrence as the impairment of sight. Disturbances in taste and smell, other than those of psychical origin, are rare. The organic sensibility is depressed, and these defects may give rise to various complications. Thus, some idiots never experience a sense of satiety and will keep on eating or drinking until compelled to stop. Owing to the feebleness in somatic sensation, the patient may not know when to defecate or urinate, so that incontinence or retention may result. The great variety of de-

fects of the bony system, among the most common of which is caries, need not be described in detail here. Idiots are particularly susceptible to pulmonary disorders, especially tuberculosis. Again, the lack of cleanliness may give rise to various complications.

The sexual organs, as a rule, show marked defects. Undescended or poorly developed testes, hypospadias, and phimosis are some of the most common abnormalities. The sexual functions are either absent or perverted.

The motor disturbances are usually well marked, and the limbs may be small. In some cases, particularly in the acquired forms due to the cerebral palsies, paralyses exist—paraplegias, monoplegias, and diplegias. Atrophies may be present. The reflexes are sometimes exaggerated, in other cases deficient or absent. Anomalies in the salivary secretions, digestive disturbances, regurgitation, nausea, and vomiting are not uncommon.

Semi-Idiocy, or Imbecility.—In the semi-idiot, or imbecile, all forms of associative memory reach a higher complexity than in the idiot. Sense memories, above all those associated with vision and less commonly those concerned with hearing, show much more stability, and the patient possesses much greater facility in re-collecting and redeveloping them; so that as a rule imbeciles become familiar with a great variety of objects, particularly those with which they are most frequently brought into contact. Again, such individuals have the power of apprehending and appreciating to some extent the quality of objects. They are capable of differentiating between the simpler colors, are able to remember names, particularly those of members of their own family, although they are usually unable to appreciate the finer differences involved in comparison and contrasts. Their vocabulary is generally limited to naming objects, and frequently the interrogative is simply expressed by giving utterance to the name of the object concerning which their curiosity is aroused. Adjectives are used more frequently than adverbs and prepositions, and the more complicated associations are apt to be feeble or entirely deficient. These deficiencies in the associative memory are largely dependent upon lapses in the atten-

tion. Imbeciles never possess the power of making any prolonged mental effort or of keeping any object for more than a few seconds within the focus of the attention.

The emotional displays of the imbecile, although not as crude nor characterized by the dissociation that is so marked in those of the real idiot, are still incomplete, monotonous, and largely confined to the expression of pleasure or pain. These individuals are practically never able to appreciate anything which does not immediately concern their own interests. The power of differentiating between right and wrong is purely elementary, and none of the affective states shows any altruistic tendencies. The acts are largely the result of transitory impulses, and a volitional movement, the result of deliberate choice and judgment, is scarcely ever witnessed. At times the impulses and motives are replaced by attempts to copy, and this power of imitation is the one important clue to the future training of the patient. Imbeciles are particularly prone to be the subject of sexual impulses; these defectives are very apt to wander away from home and thus form a very considerable percentage of the vagabonds and unemployed poor. Their excessive emotional outbreaks not infrequently lead them to resort to vindictive and brutal acts. Hatred in the true meaning of the word, however, cannot be said to exist in their minds, inasmuch as their actions are dictated by impulse. Nevertheless, under the spur of a sudden provocation they sometimes attempt to damage property, set fire to houses, or attack members of the family of those who have irritated them.

Again, the movements of the imbecile are far more purposeful and coördinated than those of the idiot, and the physical symptoms are much less pronounced. Speech comprehension and articulation are far better developed, although more or less defect is generally present—lisping, stammering, and the like. Sometimes these patients have difficulty in the pronunciation of certain consonants—G and K, G and T, S, R, or L. At times all the movements concerned in the articulation of speech seem to be hampered. The movements of the tongue are more or less limited. The disturbances of speech in mentally in-

paired children have been carefully studied by Liebmann,[6] who divides them according to their etiology as follows: (1) The so-called secondary troubles, including mutism and agrammatism, stuttering, and lisping. (2) Primary troubles in which the speech, though present, is indistinct. The latter are dependent either upon organic or functional causes. Among the causes of the former are malformations or paralyses of the palate, narrowing of the pharynx caused by local obstructions, and disturbances of hearing.

The movements of the tongue are always somewhat limited. The other motor defects are generally more obvious in connection with the finer and more coördinated forms, such as those necessary in grasping a pen or holding a fork. The manners and gait of such individuals may be coarse and clownish, and immediately suggest the decided mental impairment that exists.

Mental Debility or Enfeeblement.—Under this category belong a large group of individuals who never attain the mental development of the average normal adult. All forms of gradation and transition exist between this and the preceding group, and no sharp line of demarcation can be drawn. As a rule, such individuals show no deficiency in the mere reception and retention of sensory impressions. Indeed, certain forms of memory may be developed even abnormally.[7] This is particularly true in regard to figures, and individuals are occasionally met with who in many ways show a deficient mentality, but have the most remarkable power of calculating and of remembering figures. Many of the arithmetical or calculating "wonders" belong to this class. As a rule, the memories which relate to the individual's home, the names of the various members of

[6] Die Sprachstörungen geistig zurückgebliebener Kinder. Samml. von Abhandl. a. d. Gebiete der pad. Psych., iv, 3. Berlin, 1901. Stotternde Kinder. Ibid., 1903. Liebmann u. Edel. Die Sprache der Geisteskranken. Halle a/S., Marhold, 1903.

[7] Peterson, F.: Idiot Savants. Popular Science Monthly. New York, December, 1896. Wiesl, Adam: Ein Fall von phänomenalem Rechentalent bei einem Imbecillen. Arch. f. Psych. u. Nervenkrankh., 1904, Bd. xxxviii, H. 1, S. 122.

his family, of his immediate friends, and all those with whom he is brought into daily contact are well preserved. Deficiencies only become apparent when the associative forms of memory necessary for the re-collecting of abstract ideas are carefully studied. The imagination in such individuals is apt to be well developed, so that not infrequently the actual defects in the higher forms of memory are concealed by the vivid play of their fantasy, which in many instances resembles that seen in cases of hysteria. As has been said, the simpler forms of associative memory, particularly those connected with the senses, show comparatively few defects, but the mental impairment that exists is frequently brought out by an attempt on the part of the individual to concentrate his attention for a certain length of time. Furthermore, the judgment of such individuals, except concerning the simplest things and the most ordinary events of life, shows considerable deficiency. Not uncommonly these deficiencies are first noticeable at the time when the child first goes to school. An attempt at manual training brings these out far less than the study of books. The emotional life, although at first normal, is apt to show anomalies, particularly in regard to the feelings connected with the aesthetic and ethical senses. The egotism of these individuals is usually striking and may be the most dominating feature in the symptomatology. As they are brought more into contact with the world they begin to exhibit eccentricities of character.

In the *apathetic type* the symptoms are those of indifference, frequently mistaken for pure laziness, the absence of any high aim or ideals, the desire to lead a life as uninterrupted and placid as possible without regard for the welfare of those about them. In the earlier years of childhood these anomalies become apparent in the disinclination shown to associate with other children, in the frequent desire expressed to be left alone. With the years of puberty the defects may become more apparent, or, instead of the apathy, fluctuations in the emotional life may become more and more marked. Such children show a marked tendency to lie and steal and are very likely to become a care and burden to their family. Later, sexual and alcoholic

excesses become more and more common and are lacking only in a very few of these individuals.

Moral Insanity.—The very mildest cases of mental impairment are frequently to be found among the large group of cases commonly referred to as instances of *moral insanity*. In these forms the defects are largely in the ethical spheres and are the result of impulses, lack of inhibition, and a variety of other causes which are often very difficult to recognize. Many of these cases, developing as they do in individuals who show a marked hereditary predisposition, may be easily confused with the various psychopathic states. At times they are complicated with hysterical symptoms and in other patients they are associated with epileptiform attacks. The imperative processes are often noted in idiocy as well as in imbecility.

The early recognition of these cases, as has already been pointed out, is of great importance, inasmuch as the existence of mental defects in children should call for their removal from the public schools and their relegation to institutions especially adapted to their peculiar needs. Recently Consoni* has called attention to the importance of careful study of the anomalies of attention that occur in feeble-minded children as one of the best means for the early recognition of the existing defect. In psychasthenic children a certain degree of static conative attention is always present. Furthermore, the degree of the general capacity for attention is in direct proportion to the affective state and their power of inhibition. In normal children the capacity for the conative dynamic attention is more developed, and is an indication of the activity of the cerebral processes.

Etiology.—The estimation of the number of imbeciles in the community with any degree of accuracy is practically impossible, as a large number, particularly those in the lower classes of society, never come under medical supervision. On account of the impaired physical state of this class of individuals the death-rate is particularly high in the earlier years of life, so that

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*Consoni, F.: La Misure de l'attention chez les enfants faibles d'esprit (Phrénasthéniques). Arch. de Psych., 1905, No. 7, t. ii, fasc. 3, p. 269.

for adults the proportion is comparatively much less. The cases, as a rule, may be divided into (1) congenital and (2) acquired forms.

(1) Of prime importance is the so-called *neuropathic degeneration* of the parents. If the family histories are carefully examined it will be found that probably one and sometimes both parents have been the subjects of nervous or mental disorders. This is somewhat more commonly observed on the mother's than on the father's side. The next most important factor is *alcohol*. According to the classical researches of Bourneville,[9] in 1000 cases of imbecility alcoholism in the father was noted 471 times, in the mother 84 times, and in both parents 65 times. Demme found that the occurrence of alcoholism was noted in 81.9 per cent. of the parents, and that in ten families of alcoholics normal children were noted in only 17.5 per cent.

Without question *syphilis* in the parents very often produces mental defects in the children, although some of the English statistics, particularly those of Piper, would seem to indicate that its significance has been somewhat overestimated. This point, however, has not as yet been satisfactorily settled, and the whole subject needs fuller investigation, particularly as in many cases, for various reasons, it is impossible to obtain definite data with regard to the presence or absence of luetic infection in the parents. A remarkable contrast is noticeable between these figures and those given in regard to the importance of tuberculosis as an etiological factor. Here the proportion varies from those of Piper—23 per cent.—to those of Kalin—56 per cent. But here again figures are apt to be misleading, and it should not be forgotten that tuberculosis is said to occur in 15 per cent. of the parents of healthy children. Again, it is also worthy of note that in scrofulous children imbecility does not occur more frequently than in the non-scrofulous. The importance of lead and various other toxic substances, as well as severe illnesses, protracted fevers and trauma, have been variously emphasized as important factors in the parents in the pro-

[9] Progrès méd., 1897, No. 2. Recherches cliniques et thérapeutiques sur l'épilepsie, l'hystérie et l'idiotie. Paris, 1900.

duction of idiocy in the children. The marriage between blood relatives, where a neuropathic family taint exists, undoubtedly emphasizes such a tendency, and the children are liable to be defective.

Some observers have taken occasion to emphasize the fact that imbecility is somewhat more common among the firstborn than it is among second and third children. This may be due to the greater difficulty attending the first as compared with subsequent labors.

(2) Among the more important of the causes of *acquired* idiocy are all the injurious factors which may affect the embryo through the mother. Among the laity it is generally supposed that severe mental shocks, frights, and the like are very apt to exert a detrimental effect upon the mental as well as upon the physical powers of the child. This may be in certain cases due to disturbances in the uterine circulation, but in all probability the importance of psychic shock in this connection has been exaggerated. The occurrence of nervous diseases during the months of pregnancy is particularly apt to give rise to mental defects in the child. Premature birth is also another cause, but in this connection it must not be forgotten that certain of these cases are due to syphilitic infection in the parent. The various kinds of trauma that may befall the mother are also of great importance in the etiology.

In about one-third of the cases of acquired mental impairment diseases occurring during the earliest years of life are of the greatest etiologic significance, and not a few children, born healthy, after a severe attack of diphtheria, influenza, measles, scarlet fever, typhoid fever, or meningitis, are left mentally deficient. This is also true for those who have had rickets, encephalitis, hydrocephalus, and various forms of convulsions. Epilepsy by itself is seldom the cause of the defect, but mental impairment is frequently associated with the seizures and forms an integral part of the same complex.

Koenig[38] affirms that a complete chain may be traced be-

[38] Koenig, W.: Ueber cerebralbedingte Komplikationen welche den cerebralen Kinderlähmungen wie der einfachen Idiotie gemeinsam sind, sowie

tween the cerebral palsies on one side, in which there is a normal mentality, to the cases of pronounced idiocy without any evidence of impaired motility.

The following table from his second paper represents an attempt to compare the etiological factors in 260 cases of idiocy with those in 70 cases of cerebral palsy:

	Cerebral Palsy.		Simple Idiocy.	
1. Mental or nervous diseases in the ascendants	about 28.5%		32 %	
2. Phthisis in the ascendants	about 14.4%	about	13.8%	
3. Father markedly alcoholic	23 %	about	15 %	
4. Mental shock to mother during pregnancy	23 %	about	12.5%	
5. Physical trauma to mother during pregnancy	about 2.9%	about	3 %	
6. Relationship between the father and mother	2.4%	about	2.3%	
7. First birth	27.1%	about	17.6%	
8. Premature birth	10 %		3.8%	
9. Born in wedlock	92 %		6.5%	
10. Child always sickly	15.7%		10 %	
11. Child last of family or last of a number of children	20 %		16.9%	
12. Nervous or mental disturbances in brothers or sisters	7.1%		30.7%	
13. Phthisis or scrofula in brothers and sisters	5.7%		2.3%	
14. Death of brothers or sisters in early years, or suspected abortions	35.7%	about	16.8%	
15. Difficult birth or asphyxia	12.4%	(14% ?)	10 %	
16. Trauma	5.7%		2.6%	(2.5% ?)
17. Infectious diseases	7.1%		3.4%	(2.3% ?)
18. Lues	4 %	certainly	6.5%	surely
	3 %	probably	4.2%	probably

Non-myxedematous Infantilism.—In the consideration of these defect psychoses a brief mention may be made of cases of *infantilism* not associated with disturbances in the function of the thyroid gland, but more or less directly dependent upon pal-

über die abortiven Formen der ersteren. Ztschr. f. Nervenheilk., Bd. xi. Die Aetiologie der einfachen Idiotie verglichen mit derjenigen der cerebralen Kinderlähmungen. Allg. Ztschr. f. Psych. u. psych.-gerichtl. Medizin, 1904, Bd. lxi. H. 1 and 2, S. 133.

monary and cardiac lesions or upon malaria. Andral and Tardieu, as well as others among the older writers, had directed attention to this subject, but it remained for Hirtz to point out the close relationship that seemed to exist between certain forms of infantilism and tuberculosis. In 1871 Lorain described a degenerative infantilism characterized by physical anomalies and a persistence of many of the youthful qualities during life. In this type it was noticed that the afflicted individuals were below the normal height, did not have hair on the parts of the body where it appears in the normal adult, and that the sexual organs were incompletely developed. The intelligence in these individuals, however, was not greatly impaired. Mitral or pulmonary stenosis was often present. These cases are capable of being differentiated from those of myxœdematous infantilism. At the time of puberty it is found that the physical and mental changes do not take place. In girls menstruation is absent, the breasts do not develop, and the whole appearance of the individual retains the infantile characteristics. It has been definitely shown that the imperfect development is not due to the anomalies in the sexual organs, since in other cases it has happened that after castration normal development has followed. In the production of this form of infantilism tuberculosis and malaria are undoubtedly factors of importance. Associated with the cardiac and cardio-vascular disturbances we not infrequently find a delayed and impaired development of the whole body characterized by smallness of stature, lack of development in the limbs, absence of hair in the axilla and about the genitals, associated with a deficiency of the sexual sense and a certain degree of mental enfeeblement. Such individuals are very often considered lazy; they are subject to emotional anomalies and phobias; they are greatly troubled by excessive blushing and show slight eccentricities in character. In the case examined by Ferranini[1] there was found a deficient intestinal absorption, a quantitative insufficiency of the albuminous derivatives in the

[1] Ueber von der Schilddrüse unabhängigen Infantilismus. Arch. f. Psych. u. Nervenkrankh., 1902, Bd. xxxviii, H. 1, p. 206.

urine, a moderate increase in the elimination of the alloxuric bases, a deficiency in the excretion of uric acid, and an increase of ammonia. The chlorides, the quantity of the urine, and its acidity were subnormal.

Pathology.—The pathology of the defect psychoses is extensive and includes a variety of macroscopic as well as microscopic lesions, the result of the action of injurious agencies which directly inhibit the development of the central nervous system.[12] In the severer cases not only are defects found in the brain, but accompanying lesions are noted in other parts of the nervous system. The alienist is more particularly concerned with those cases in which structural imperfections are not so sufficiently extensive as to preclude the existence of all mentality, so that to him the cases of acephalic or anencephalic monsters are not of special interest. The description of the various malformations of the skull and their relation to the brain is a subject that cannot be discussed in detail in this book.[13] Coexisting and related defects of the skull and brain are sometimes found, but these are not constant, nor is there always apparent in the skull any external evidence of the intracranial lesion.

Premature ossification frequently takes place in cases of idiocy, but although a diminution in the volume of the brain is sometimes associated with decreased capacity in that of the skull, these two conditions are not always coincident. Disturbances occurring during intra-uterine life—rhachitis fœtalis, chondrodystrophia fœtalis, or the osteogenesis imperfecta of the newborn—may be the cause of curious structural anomalies, such as partial or general craniostenosis. There may be a hyperplastic condition of the brain with a marked hyperostosis at the base of the skull, and instead of being premature the ossi-

[12] Hammarberg: Studien über Klinik u. Pathol. der Idiotie. Upsala, 1895. Bourneville: Recherches cliniques et thérapeutiques sur l'épilepsie, l'hystérie et l'idiotie, vol. i *et seq.* Paris, 1900. Spiller, W. G.: A Contribution to the Pathology of Imbecility and Idiocy, Phil. Med. Journal, March 12, 1898.

[13] See Anton: Entwickelungsanomalien des Gehirns. Handbuch der pathol. Anat. des Nervensystems. Herausgegeben v. Flatau, Jacobsohn u. Minor, Berlin, 1903.

fication of the cranial bones may be delayed. This latter condition has been noted in cases of congenital syphilis. The defects involving actual loss of the substance of the brain are manifold. Among the more important are those in which there is complete or partial absence of the commissural fibres, particularly of the corpus callosum and of the anterior commissure. In some of these cases there is a corresponding change in the shape and size of the convolutions, particularly those on the mesial surface of the brain, where the convolutions are irregularly developed. In some instances the gray matter is relatively intact, the greater loss of substance being found in the white matter. Duret has called attention to the fact that the complicated vascular system in the pia does not develop before the fourth fetal month and that, as branches from these vessels penetrate the cortical substance, marked disturbances during the process of development become possible. According to Anton[14] the anomalies in development of the cerebral cortex itself are frequently noted, and according to Hammarberg three types of cortical defects occur. First, there may be a persistence of the embryonal arrangement of the cellular elements, both as regards their distribution and individual character, cells as well as fibres retaining their primitive type. The zonal fibres are few in number, occasionally only traces of them being found. Second, in the less severe cases the embryonal type of the elements is lost, but their arrangement and number correspond to the development noticed in children at the end of the first year. The third class represents a slightly more advanced stage of development. Sachs[15] has called attention to similar conditions in cases of the so-called amaurotic family idiocy.

Microgyria.[16]—This condition may be the result of a pri-

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[14] Anton, G.: Hydrocephalen. Entwickelungsstörungen des Gehirns. Handb. der Pathol. Anatomie des Nervensystems. II Abth., Berlin, 1903.

[15] Journal of Nervous and Mental Diseases, 1887, 1892.

[16] Probst, M.: Zur Lehre von der Mikrocephalie u. Mikrogyrie. Arch. f. Psych. u. Nervenheilk., Bd. xxxviii, H. 1, 1904.

mary disturbance in the development of the brain (true microgyria), or may be caused by an active disease process directly affecting the cortical tissues during fetal life. This category also includes congenital defects of the cortex, in which there is a striking diminution in the size of the convolutions as well as of the cortical substance. The histological examination of the sections through the cortex in these cases reveals a variety of changes. In some instances the neuroglia layer is increased in breadth; the number of nerve-cells is diminished and their position and arrangement are irregular. The vessels and membranes in cases of true microgyria are seldom affected, but where there has been a superficial inflammation the existence of the usual changes may be demonstrated.

Heterotopia.—An abnormal distribution of the gray substance—although due to developmental anomalies in the fetus—may occasionally exist even in adults without giving rise to signs of alienation. The gray substance may contain elements similar to those seen in the normal cortex or basal ganglia, or may be completely changed by a preëxisting hydrocephalus (Virchow).

Porencephalus, or loss of brain tissue, represents a great variety of lesions, for a full description of which the reader is referred to the text-books on pathology and to the monographs of Shirras and others.

The majority of these lesions occur in the beginning of intra-uterine life. In a comparatively large number of cases, however, the porencephalic defects are acquired during life, particularly in the earlier years, and have been found in the mesial or basal surface of the hemispheres, in the central island, in the temporal, parietal, frontal, and occipital convolutions, while in a comparatively large number of cases the basal ganglia were also affected.

Hydrocephalus.—Under this category are included the cases in which there is a marked increase in the quantity of the cerebrospinal fluid. The quantity normally contained in the brain is supposed to vary from 60 to 150 cubic centimetres. In the mild cases of hydrocephalus it varies from 200 to 400 cubic

centimetres, but cases are reported in the literature in which the total quantity was more than five litres. A great variety of changes are noted in this condition. The ventricles are dilated, and as a result of the pressure various lesions are noted in the brain substance in the cortex, basal ganglia, cerebellum, spinal cord, and medulla.

The terms *microencephalus* and *microcephalus* include all the disturbances in the development of the nervous system which result in such a diminution in the size of the brain and skull as to cause a marked disproportion between these and the other portions of the body. An abnormal smallness of the brain and skull which occurs in dwarfs—nanocephalus—inasmuch as it is a symmetrical diminution, is a condition that is different from the one under discussion. The cases of microcephalus proper may be grouped in two categories: (1) The simple cases in which there has been a marked impairment in the development of the brain without a residuary pathological process. Associated with this there is a corresponding proportional lack of development in the bony covering. (2) Cases in which the proportional relations between the brain and skull are markedly disturbed. This type was described by Giacomini as pseudo-microcephalus. This form of the microcephalic brain does not represent merely a miniature of the normal condition, for there is often a considerable asymmetry noticeable in the development of various convolutions. The histological changes have been studied by a number of observers and have been shown to include a variety of lesions. In some cases the number of the nerve-cells is markedly decreased. Frequently there is an irregularity in the arrangement of the elements.

The causes of hydrocephalus and microcephalus are too complex and varied to be discussed in the present chapter. Of the various monographs on this subject the most comprehensive is probably the one by Anton,[17] which also contains a review of the literature.

From what has been already said, it will be seen that the

[17] Op. cit.

pathology of the defect psychoses cannot be comprehensively treated in a text-book on psychiatry. The various complications in the nervous system associated with the lesions to which reference has been made cannot even be enumerated. Under the head of acquired idiocy or imbecility are grouped a number of cases which are due to lesions occurring during the earlier years of life—organic brain disease, meningitis, trauma, etc. Reference is also made to this same subject in the discussion of organic brain diseases and their relation to alienation.

The *diagnosis* of idiocy, except during the earlier stages of infancy, is, as a rule, not difficult.

The following table, based by Church and Peterson upon the observations of Preyer with some slight modifications, is of use as an aid to diagnosis:

Circumference of skull in both sexes at birth, 36 cm. Transverse diameter, 22 cm. Naso-occipital, 22 cm.

At the end of the first year the circumference is increased by from 8 to 10 cm.; the transverse by from 4 to 5 cm.; the naso-occipital by from 8 to 10 cm.

Ireland considers that the term microcephalic is applicable to all heads of adults below 17 inches, or 431 mm., in circumference. In hydrocephalic skulls examined by Humphrey the greatest circumference was from 25.5 to 29.5 inches.

Normal child:

1st to 3d day.—Sensitive to light.

2d to 3d day.—Reaction to touch.

4th day.—Evidences of audition.

5th day.—Sensibility to taste.

11th day.—Notices candle, facial reaction suggesting pleasure.

23d day.—Tears.

36th day.—Smiles.

90th day.—Vowel sounds.

1st month.—Taste, smell, touch, sight, hearing. Sleeps two hours at a time, 16 hours out of 24.

2d month.—Occasional strabismus. Recognizes human voice. Turns head towards sound. Pleased with music and with human faces. Laughs at tickling and claps with its four fingers at the 8th week. First consonants, 43d to 51st days.

3d month.—Cries of joy at sight of mother or father. Eyelids not completely raised when the child looks up. Knows sound of watch at 9th week; listens with attention.

4th month.—Eye movements perfect. Sees objects move towards

the eye. Joy at seeing itself in mirror. Poses thumb. Head held up permanently. Able to sit up with support to back.

14th week.—Beginning to imitate.

5th month.—Discriminates strangers. Pleasure of crumpling and tearing newspapers, pulling hair, or ringing bell. Sleeps 10 or 11 hours without food. Consonants l and k. Seizes and carries objects to mouth.

6th month.—Raises itself to sitting posture. Laughs, raises and drops arms when pleasure is great.

7th month.—Astonishment shown by open mouth and eyes. Turns head as sign of refusal.

8th month.—Astonished at new sounds and sights.

9th month.—Stands on feet without support. Claps hands for joy. Fear of dog. Turns over when laid face down. Turns head to light when asked where it is. Questions understood before child can speak. Voice more modulated.

10th month.—First attempts at walking.

11th month.—Sitting has become habit of life. Stands without support; whispering begins.

12th month.—Pushes chair. Obeys command "Give the hand."

13th month.—Says "papa" and "mamma."

14th month.—Raises itself by chair; imitates coughing and swinging of arms.

15th month.—Walks without support. Understands ten words.

16th month.—Runs alone.

17, 18th, 19th months.—Sleeps 10 hours at a time; associates words with objects and movements. Blows horn, strikes with hand or foot; waters flowers; tries to wash hands, to comb and brush hair, and to execute other imitative movements.

20th to 24th months.—Marks with pencil on paper; executes orders with surprising accuracy.

25th to 30th months.—Distinguishes colors. Makes sentences of several words. Begins to climb and jump and to ask questions.

30th to 40th months.—Goes upstairs without help. Classes formed, words distinctly spoken. Influence of dialect appears. Much questioning.

Frequently the occurrence of hydrocephalus, microcephalus, or some other physical deformity directs the attention of the parents to certain deficiencies in reactions of the child to the simpler forms of stimulation. Failure to take the breast, inability to fix its eyes upon objects or to follow them may be noted early. Only gradually, however, in the majority of cases do the defects in intelligence become apparent. Anomalies of dentition are often very marked, and it has been calculated that some degree of abnormality in this respect is found in over 90 per cent. of the cases. The primary dentition is

greatly delayed. The teeth are irregular in form and frequently appear with marked intervals. Diminution in the number is not uncommon. Erosions which are commonly attributed to syphilis are noted. The presence of any of the physical defects to which reference has already been made, particularly those affecting the skull, may be of great aid in establishing a diagnosis during the early period of infancy. This is particularly true in regard to the failure of the fontanelles to close or the premature ossification of the bones of the skull.

The *diagnosis* in the acquired defect psychoses is frequently more difficult than is the case in the congenital types. In children the recognition of the milder forms depends largely upon the history obtained. It is not necessary to repeat what has already been said in regard to the various symptoms. In the milder cases the defects in intelligence first become marked when the children go to school. It is then found that they are unable to keep up with their classes, that their attention lapses easily, that they fail to take a normal interest either in their studies or companions. In addition to the psychic degeneration there may be evidences of ethical defects or emotional anomalies. Many of these symptoms may occur, especially at the time of puberty, in other conditions, but in the defect psychoses the individual simply fails to develop intellectually, emotionally, and ethically, and there are no progressive signs of marked alienation. As dementia præcox sometimes occurs in feeble-minded children, this combination may give rise to difficulties in diagnosis. But the appearance of stereotypy, mannerisms, the cataleptic excitement—which is essentially different from that seen in excited idiots or imbeciles—are all features that are in a measure characteristic of the progressive psychosis. The occurrence of physical symptoms—the Argyll-Robertson pupil, the absence of knee-jerks and disturbances of speech—serve to distinguish the youthful cases of dementia paralytica from idiocy and imbecility.

The following scheme, slightly modified from one proposed by Heller, could be used to good advantage in schools in endeavoring to determine the number of pupils present who

show mental deficiencies sufficiently marked to warrant their removal to special institutions:

Name.
Age.
Religion.
Profession or occupation of parents.
Residence. Location in city. If in a home, the number of rooms and occupants.
General surroundings.
Evidences of poor heredity. Alcoholism, mental diseases, suicide, criminality, relationship of parents; lues, tuberculosis.
Brothers and sisters. Ages, occupations, any facts bearing upon their mental and physical characteristics.
Development of the child. At what age did it begin to walk and speak? Evidences of rhachitis.
State of nutrition. Height. Weight. Circumference of skull.
History of illnesses. Convulsions. St. Vitus' dance. Brain diseases. Injury to the skull or nervous system.
Physical anomalies and signs of degeneracy. Paralyses, headaches, defects in speech, hearing, or vision; mouth breathing.
Traits. Cleanliness, dirtiness, truthfulness, lying, a tendency to steal, apathy, irritability, hypersensitiveness, imaginativeness, forgetfulness, superficiality, sexual anomalies.
Particular inclinations and capabilities. Music. Manual dexterity. Character of writing and power to calculate.

Treatment.[18]—The treatment of the defect psychoses can not be entered upon in detail in a general text-book. Broadly speaking, idiotic children are much better off in an institution than they are at home. Those who exhibit some capability of being trained should be placed in an institution where there are especially appointed teachers. As regards the excited type of idiocy, it is particularly desirable that these defectives should be removed from their surroundings, especially if there are other children in the family, as they are frequently subject to impulses and anomalous emotional states which may be a source of great danger, not only to themselves but to those about them. Furthermore, their condition is rendered worse by the petty annoyances and teasing to which they are too often exposed. Again,

[18] Weygandt, W.: Die Behandlung idiotischer u. imbeciller Kinder in ärztlich u. pädagog. Beziehung. Würzburg, 1900. Heller, T.: Grundriss der Heilpädagogik. Leipzig, 1904.

it is not uncommon for these children to be given to excessive masturbation, and generally speaking they are unfit associates for other children. The most appropriate training is usually one in which manual traits are cultivated and pedagogy plays an altogether minor part. Not infrequently the results that may be obtained from skilful training are remarkable in the milder grades of idiocy and imbecility. Many of these unfortunates can be taught not only to take care of themselves, to feed and dress themselves, but also to undertake various of the simpler forms of employment, such as light work about the farm or in the house. Imbeciles, particularly those of the higher grades, can be rendered capable of gaining, if not a livelihood, at least some recompense for their labors—which, among the poorer classes of society, is highly desirable. As these children learn largely from imitation, great care should be taken that the examples put before them to imitate should be the most appropriate possible. All forms of overexertion, physical or mental, should be prohibited; the children should live as much as possible out-of-doors; the diet should be carefully regulated and proper precautions taken against the various accidents to which their condition exposes them. Gastro-intestinal disturbances are not uncommon, inasmuch as such individuals are apt to bolt their food without masticating it, and frequently eat whatever is put before them without exercising the slightest judgment as to quality or quantity. Obstinate constipation is not infrequent. On account of the general lowering in the mental and physical faculties these unfortunates are particularly susceptible to various forms of infection—tuberculosis, pneumonia, and the exanthemata—and their vitality is, as a rule, far lower than that of normal children.

Operative interference in cases of microcephalus has proved barren of results. Nor is this surprising, since it has been shown that the condition is not due solely to the early ossification and too rapid closing of the sutures, the changes in the bony vault being only a part of the whole disease process. The milder grades of congenital mental defects are not uncommonly found among children attending the public schools.

These individuals suffer from a method of education for which they are not adapted; nor is it desirable that they should be allowed to associate with other children. Unfortunately, up to the present time only in Germany is any serious attempt being made to remove these mentally deficient children from the public schools and place them in institutions where they can be properly cared for. When there is any reason to believe that syphilis has been an important etiologic factor, the children may be given mercury or the iodides. Not infrequently the administration of calomel is followed by slight temporary improvement. In rachitic imbeciles careful attention should be paid to the diet. It should be nutritious but plain, made up largely of milk, eggs, fish, and green vegetables, with only a little meat. Life in the open air and gymnastics under medical direction are also indicated. Cod-liver oil, the syrup of the iodide of iron, arsenic, and phosphorus often prove beneficial.

CHAPTER X

PSYCHOSES WHICH ARE PROBABLY IN PART THE RESULT OF AN AUTOINTOXICATION[1]

These may be conveniently considered under the following headings: A. The so-called infectious or fever deliria. This category includes all forms of mental aberration associated with febrile diseases and not forming an integral part of other psychoses. B. The acute or collapse delirium. C. The subacute delirious or confusional states variously described as amentia, acute hallucinosis, delirious mania, acute confusional insanity, and, finally, Korsakow's symptom-complex.

A. The Fever Deliria. In a description of the fever epidemic of 1836 Schweich cites a reference from the observations made by an eye-witness of a somewhat similar condition in the year 1580 to the effect that "some had a severe bleeding, some were out of their heads and babbled, but such was only a *sweating delirium*." Sydenham and others of the earlier writers directed attention to the not infrequent association of fever with mental disturbances, and Esquirol tried to establish a definite causal relation between these occurrences. Schlager, in 1857, described many of the features of the typhoid psychoses,[2] and Weber,[3] in 1865, directed the attention of physicians more especially to the forms of alienation associated with acute diseases. Mental aberration of varying de-

[1] For the bibliography see Adler: Ztschr. f. Psych., Bd. liii, p. 748, and Ballet, Traité de la Pathologie Mentale. Paris, 1903, p. 390.

[2] See also Farrar, Clarence B.: On the Typhoid Psychoses. Medical Reports of the Sheppard and Enoch Pratt Hospital, 1903, vol. v, No. 1, p. 42. Friedländer, A.: Ueber den Einfluss des Typhus abdominalis auf das Nervensystem. Berlin, 1901. Siemerling: Ueber Psychosen nach akuten u. chronisch. Infektionskrankheiten. Allg. Ztschr. f. Psych. u. psych.-gerichtl. Medizin, Bd. lxi, H. 1 and 2.

[3] Weber, Hermann: On Delirium or Acute Insanity during the Decline of Acute Diseases, etc. Med.-Chirurg. Trans. 1867, xlvii, p. 233.

grees of intensity and of length of duration has been reported in connection with practically all the febrile diseases. The frequency of these psychic manifestations depends upon a number of conditions, such as the nature of the disease, the severity of the epidemic, the time of life at which the individual is affected. It has been estimated that from 2 to 4 per cent. of all mental disorders are referable to an attack of some acute infectious disease. In some countries at least 3-5 per cent. of the cases of insanity are attributed to typhoid fever. Physicians have long recognized the fact that the severer epidemics of influenza were in a comparatively large percentage of the cases particularly apt to be followed by mental trouble. The character of the alienation was variously described as mania, hypochondriasis, melancholia, or depression associated with suicidal tendencies. Berkley and Jelliffe[1] are among those who have more recently directed the attention of physicians in this country to the importance of this disease as productive of various forms of alienation. The latter particularly has emphasized the fact that a great increase in the number of suicides occurred during the decade in which influenza was prevalent as compared with that prior to the appearance of this malady. Although this increase can not be attributed solely to the appearance of influenza, the fact can not be doubted that this disease has been instrumental in adding materially not only to the number of cases of alienation, but to the severer forms in which the impulse to self-destruction is a common symptom. Women who suffer from an acute infectious disease are somewhat more prone to show signs of alienation than are men, and the greatest number of cases are noted in both sexes during the prime of life. Nevertheless, even very young children are by no means exempt.[2] This group may be subdivided into: (*a*) The prefebrile delirium, a con-

[1] Jelliffe, Smith Ely: Influenza and the Nervous System. Phila. Med. Journal, 1902, Dec. 27, p. 1041.

[2] Heinemann, M.: Ueber Psychosen u. Sprachstörungen nach acut. fieberhaften Erkrankungen im Kindesalter. Arch. f. Kinderheilkunde, Bd. xxxvi, p. 173–195.

dition that frequently gives rise to serious errors in diagnosis; (b) the more common delirious state developing during the height of the fever; (c) the post-febrile psychoses. These last, properly speaking, begin at varying intervals after the temperature has begun to subside and their main clinical characteristics—if they are not a part of other psychoses such as manic-depressive insanity or dementia præcox—are not essentially different from those of collapse delirium or amentia. Abnormal psychic states may develop during the course of any febrile disease, and, furthermore, it is important to note that a fever may be an important etiological factor, not only in these but also in other forms of alienation.

(a) In the first subdivision the dominant symptoms, according to Farrar, are (1) impaired associative activity; (2) disorientation; (3) psychomotor excitement; (4) fallacious sense perceptions with developing delusions; (5) anxious affective states. As a rule, for some time prior to the onset of the mental malady the patient has been in poor health, has been nervous, sleeping poorly, showing considerable motor restlessness, more marked, probably, at night. There is an inability to focus the attention and considerable impairment in associative memory. Symptoms of a general psychomotor restlessness, not limited to the functions of speech, are more common in these cases than in those in which there are psychomotor retardation and depression. This slight psychic aberration develops several days before the more acute symptoms, but occasionally, when the toxæmia seems to be more intense, the prodromal period may be absent, or, if it exist at all, is only of a few hours' duration and then immediately passes over into the stage of acute delirium. Such a condition is sometimes met with in the exanthemata, typhoid fever, pneumonia, influenza. The patient after feeling sick for a few hours or days suddenly becomes wildly maniacal. Such cases carry with them a grave prognosis and occur generally, though not always, in individuals who have an hereditary predisposition. In addition to the symptoms already referred to, it is important to note that there is apt to be considerable disturbance in the reception

and elaboration of sensory stimuli, which in most cases gives rise to illusions which are generally of a disagreeable or terrifying character. The sound of voices, of people walking in the wards, and all ordinary forms of auditory stimuli are at once misinterpreted by the patient and render him unduly apprehensive and anxious. Associated with the illusions there are, as a rule, very vivid hallucinations which constantly change in character. This combination of symptoms may give rise to a disorientation and incoherence so complete as to amount to asymbolism. The increase in the number of illusions and hallucinations is generally associated with still greater motor restlessness, the refusal of food, and the exaggeration of all the somatic symptoms. In some instances there is a continuous and rapid progression in all the symptoms and the patient dies without the occurrence of any break in the delirium. In other cases lucid intervals intervene and persist for several hours at a time, so that the patient to a certain degree becomes rational, appreciative of what is going on about him, and shows a fair degree of orientation. In some cases the initial delirium passes over directly into an abnormal mental state, which persists not only during the acme but after the subsidence of the febrile symptoms, only disappearing long after the drop in temperature has occurred. In rare instances the delirious stage is not accompanied by any fever and the mental symptoms subside as the temperature rises.

The *prognosis* in these cases of initial delirium is generally more unfavorable than in those in which the mental aberration makes its appearance later on in the disease. Not only is there a greater danger that the alienation may persist for a considerable period of time or end in a paranoic state, but the gravity of the prognosis, so far as the disease itself is concerned, is generally worse. The severe forms of initial delirium in typhoid fever and acute articular rheumatism with a high temperature (41° to 44° C.) are particularly dangerous. The percentage of mortality in all cases varies somewhat according to different observers, but the average of all available statistics is between 40 and 50 per cent.

(*b*) The great majority of delirious states, since they develop during the height of the disease, belong to this second subdivision. This is particularly true in regard to typhoid fever, pneumonia, influenza, acute rheumatism, meningitis, and the various exanthemata. The symptoms may not differ essentially from those already described as belonging to the prefebrile deliria, except that in the majority of cases the onset is more gradual. There is nearly always considerable interference with the transmission of sensory impulses, psychic anæsthesias, paræsthesias, or hyperæsthesias sometimes appearing, generally associated with hallucinations and delusions. Consciousness is almost never unclouded. The degree of motor restlessness varies greatly in different individuals, sometimes being so intense that the patient can be restrained only with the greatest difficulty, while in other instances it is limited to spasmodic twitchings or incoördinated choreiform-like movements of the extremities. At times there develop twitchings of the facial muscles and some interference with the muscles of speech, more rarely with those of deglutition. These cases, according to the severity of their symptoms, may be subdivided into four groups (Kraepelin). (1) Those in which the clouding of consciousness is most marked, but in which strange organic sensations are present. The motor restlessness varies from a mere fidgetiness to more pronounced forms. The patient complains of headache and various feelings of discomfort. His sleep is broken and he is apt to suffer from unpleasant dreams. (2) The symptoms are somewhat increased in intensity, and hallucinations and delusions, particularly those of a dream-like character, begin to make their appearance. These latter, as a rule, are strange and grotesque, and are both visual and auditory in character. (3) Here we meet with a marked increase in the number of the symptoms, more or less complete disorientation, and a diminution or entire loss of appreciation by the patient that he is ill, a marked exaggeration of the motor restlessness, varying emotional states characterized by great intensity as regards their expression. Furthermore, there is an exaggerated tendency to talk and a

sensory flight of ideas. (4) In the severest cases there is complete disorientation, consciousness is very markedly affected, external impressions produce practically no reaction; the patient, when not comatose, talks continuously in a low, mumbling tone, and periods of coma vigil and lethargy are of frequent occurrence.

The symptoms generally continue as long as the fever lasts, and may then disappear after the defervescence; on the other hand, they may persist for a considerable period of time, until finally one of two things happens,—either the patient gets well or else he passes over into a paranoiic condition. The intensity of the mental symptoms does not seem to bear any definite relation to the height of the fever or the rapidity of the pulse. The mental disturbances occurring during typhoid fever are supposed to be more or less specific, and yet a careful study would show that they do not differ essentially from those which may occur in other febrile disorders of equal duration. The intensity of the febrile delirium varies greatly in different cases.

The *diagnosis* of these conditions is not difficult. The *prognosis* is always grave, and becomes more so when the mental symptoms persist after the fall in the temperature.

The *treatment* in the prefebrile as well as in the febrile deliria is largely symptomatic. If the patient is not too excited, the cold pack may be used with great benefit. Ice-bags may be kept applied to the head. If the patient is not too weak, the full bath is often very efficacious. Sometimes it is advisable in dealing with very excited patients to begin with water at about blood-heat and then gradually reduce the temperature. The nursing of these patients is all-important. In well-equipped hospitals, where there are plenty of skilful nurses and abundant opportunity for carrying out hydrotherapeutic measures, the camisole and other artificial means of restraint are practically never indicated. Moreover, hydrotherapy will generally render unnecessary the administration of hypnotics and sedatives of various kinds which are often detrimental in these cases. Saline infusions are often very effective.

(c) The *post-febrile* psychoses may for the sake of convenience be divided into two groups: (1) those occurring coincidently with or soon after the subsidence of the temperature; (2) those developing more slowly and after a longer lapse of time. As has already been pointed out, fever in itself may be an etiologic factor of great importance in the development of almost any form of alienation, such as dementia præcox, manic-depressive insanity, etc., although it can never be regarded as a causative agent specific for any one type. After the drop in temperature has occurred or during the period of convalescence acute delirious or confusional conditions may develop, a description of which is given in the following section. At present it is the general consensus of opinion[6] that the pathological changes which occur in the central nervous system as the result of elevations of the bodily temperature are to be regarded as the results of autointoxications; but the manner in which the toxines act is still a mystery, and as yet no definite relationship can be established between the lesions and the clinical symptoms. Formerly considerable importance was erroneously attached to the supposed hyperæmic or anæmic condition of the cerebral vessels. Such conditions may be the result merely of preagonal or postmortem changes, or due to the alterations in the position of the body. Nevertheless it is always possible to say, from inspection of the central nervous system, particularly in sections treated with the Nissl stain, that the individual previous to death has suffered from pyrexia. In the nerve-cells, as a rule, very marked changes are demonstrable. They show a tendency to stain diffusely, this feature probably being the result of the dissolution of the chromatic substance and its diffusion throughout the cell. The nucleus is sometimes swollen and eccentric; the processes, particularly the axis cylinder, show a strong tendency to stain deeply. Some observers have reported fragmentation, particularly of the apical processes and axis cylinders.[7]

[6] Friedländer, Goldscheider, Aschaffenburg.
[7] Meyer, E.: Orth's Festschrift.

PLATE I



PLATE II



PLATE III



PLATE IV



Ferret cells showing diffuse staining of cytoplasm, nucleus and processes. ×1000. Spencer-Lens, monobloc, 1/12. (Cabinet book, plate.)

PLATE V



Large pyramidal cell, last. cort. convolution (Betlz stain). × 1000. A, axis cylinder; L, lateral basal processes. The intervening substance, which is not stained in I and II, and is indicated in III, in this preparation is easily recognizable.

In some of the acute intoxication psychoses mitotic figures are demonstrable in the glia.

The nerve-fibres are sometimes affected in the severer cases, showing degeneration of the myelin sheaths and the formation of small globular masses. In the protracted cases, particularly the typhoid psychoses, fatty degenerations are noted in various parts of the nervous system. Micro-organisms —the typhoid, influenza, and tubercle bacillus, the pneumococcus and various other forms, as well as the parasite of malaria—are often found in the central nervous system. What relations these organisms bear to the pathological changes and to the clinical symptoms is not clear, but it is generally supposed that, in the majority of instances at any rate, they are of only secondary importance and that the invasion has often taken place just before death.

B. *The Acute Delirium. Collapse Delirium. Delirium Grave. Phrenomania. Bell's Disease.*—Frequent references, more or less definite in character, occur throughout medical literature[8] to a form of aberration bearing a striking similarity in certain particulars to the type seen in infectious diseases and characterized by an acute onset with severe somatic disturbances. Calmeil[9] first suggested the name of *the acute delirium*, but it remained for Weber,[10] under the title of *collapse delirium*, to give a detailed and accurate clinical account of this group of symptoms. The unity of the various clinical pictures was first emphasized by certain French clinicians (Chaslin), but great credit is due to the Heidelberg school for recognizing a similar origin and development for these cases, despite the fact that at first sight their symptoms are strikingly dissimilar. Nor does this union upon a common basis have any reference to the supposed bacillary factor in the etiology,—a theory advocated principally by the Italians,—but is derived from the fundamental analysis of these

[8] Hippocrates: Coelius Aurelianus. Thomas Willis.
[9] Traité des mal. inflam. du cerveau. t. i, p. 142.
[10] Med. Chir. Trans., vol. xlvii, p. 135. London, 1864.

conditions, the result of experimental studies made by Kraepelin and others into the nature of fatigue.

The malady is characterized by a marked interference with the mental functions, disturbances of sensation and motion, and in from 40 or 50 per cent. of the cases a favorable termination after a period varying from several days to two or three weeks. It makes its appearance in neurotic individuals who have been subjected to severe psychic shocks or during the period of defervescence after febrile diseases—such as the exanthemata, typhoid fever, pneumonia, erysipelas, influenza—or after severe trauma, parturition, or surgical operations. Generally, after the prodromal period, which may vary from a few hours to several days, the patient begins to suffer from motor anomalies of the hyperkinetic, parakinetic, or akinetic type, with accompanying psychic anæsthesias, paræsthesias, or hyperæsthesias, and various kinds of hallucinations, which are particularly apt to take on a fantastic and bizarre character, the patients complaining that they see various animals, angels, or devils. In the earlier stages these hallucinations are likely to be dream-like in character and seldom dominate the actions of the individual, but gradually the sensory plainness becomes exaggerated and their reflex power greatly increased. Soon states of apprehensiveness and marked anxiety develop. The patient is distracted or frenzied by the apparitions which seem to hover about his bed, and may even attempt to escape from them by covering his head with the bedclothes or frequently, if not watched, by resorting to other and more desperate means, in his blind fury attacking nurses or physicians. As the disorder progresses, disorientation becomes more and more complete and he becomes unable to recognize his surroundings, declaring at one moment that he is in heaven, or again affirming with equal emphasis that he is in prison or in the depths of hell. The identity of those about him is frequently confused; the nurse or the physician is claimed as an intimate friend or, when the emotional state has changed, is regarded with suspicion or terror. As the irritability increases, the speech-centres are almost never left unaffected and the inco-

herence increases. The motor disturbances may be so exaggerated that all coördinated movements are seriously impaired. Consciousness is greatly clouded. The affective state is one in which inexplicable impulses dominate the cerebral activity and all forms of associative memory are greatly impaired. In some instances the reactions of the patient and the content of the ideas expressed may at times suggest the typical flight of ideas of the maniacal patient. But as a rule the incoherence becomes greater, the individual is less responsive to external stimuli, and disorientation is frequently more marked and consciousness more clouded. In some cases the character of the delirium is less boisterous, the motor restlessness not prominent, and the patient's appearance suggests the low muttering delirious state of typhoid fever. In still another type of the disease the individual hallucinations are not as dominant and those that exist are less evanescent in character, while certain forms of auditory or visual hallucinations seem to be more or less constantly in the field of the patient's attention and an explanation or systematization of these phenomena may be attempted by him. Periods of mental depression may alternate with those of excitement or stupor. These cases are extremely difficult to differentiate from the other psychoses, particularly amentia.

The *physical symptoms* which occur during the course of the acute delirium are manifold, although none are specific. On this point, however, certain writers hold a different view.[11] During the prodromal period we meet with anorexia, nausea, vomiting. In some cases, in addition to the psychic hyperæsthesias alluded to, there are peripheral disturbances in sensation. At other times there are painful areas over the site of some internal organ, particularly in the cardiac and epigastric regions. As the disease develops, there may be a rise in temperature, 39° to 41° C. not being uncommon, and a more or less sudden drop just prior to death is sometimes noted. Cases

[11] Pritchard, W. B.: Delirium Grave. The Journ. of Nerv. and Ment. Diseases, vol. xxxi, March, 1904, No. 3.

are observed in which there is no febrile rise, and even subnormal temperatures occur quite frequently. During the acme of the delirium the patient gives every appearance of an individual suffering from a severe toxæmia. The face has a peculiar drawn appearance, the complexion is sallow, the eyes are somewhat sunken, the tongue is thick and coated, and, as the motor restlessness becomes greater, there seems to be considerable difficulty in articulation. The loss of weight is marked, and a rise in the curve, even if the mental state is unchanged, generally indicates a more favorable prognosis. Sometimes a patient will gain several pounds in two or three days.

The gastro-intestinal disturbances are generally pronounced. Sometimes the nausea and vomiting are so obstinate that no food can be retained and a resort to artificial feeding becomes necessary. In other instances the refusal to take food is the result of delusions. The breath, as a rule, is fetid and constipation is marked, although at times a watery diarrhœa supervenes. The urine is often scanty, of high specific gravity, and, according to numerous observers, is very toxic in its qualities, a statement, however, that does not always hold good. The chlorides are frequently diminished and traces of albumin and sugar are not uncommon. Certain investigators have found an increase in the quantity of indican and uric acid. At times there may be an unusual flow of saliva. The skin in the cases with a high temperature is dry, but in the asthenic types of the disease is moist and covered with a cold, clammy sweat. The latter is particularly noticeable in fatal cases. Not uncommonly the patients, particularly in the severe types of the disease, suffer from epileptiform or mild apoplectiform attacks, the occurrence of which has sometimes been responsible for a diagnosis of general paresis. In rare instances disturbances in the eye-muscles and in the reflexes to light are noted. As would naturally be expected, the skin and tendon reflexes show no essential difference from those belonging to all stages of excitement and are, as a rule, markedly increased.

Termination.—At least 50 per cent. of the patients suc-

comb. In venturing a prognosis the character of the physical symptoms should always be allowed great weight. The outlook is generally worse where the motor restlessness is excessive or the patient shows signs of collapse, the pulse becoming small and rapid and the stomach rejecting nourishment. The delirium runs its course within a few hours or several days, and, when a favorable outcome is to be expected, usually terminates, as do many of the cases of delirium tremens, the patient falling into a prolonged sleep.

Much can be accomplished in the way of *treatment*. A great deal depends on the nursing, and these individuals are far better off in a good general hospital than in any asylum imperfectly equipped in this respect. Moreover, in view of the difficulties attending the nursing of such patients in private houses, any attempt to care for them at home is usually unjustifiable. One or more nurses must be in constant attendance, so that everything possible may be done to relieve the symptoms as speedily as possible. Although such patients frequently struggle furiously to get away from their attendants, trying to jump out of the window or to injure themselves in various ways, mechanical restraint should not be resorted to until appropriate hydrotherapeutic measures have been tried and failed. In practically all cases, if the warm continuous bath is properly given, being supplemented, if necessary, by small doses of some hypnotic, it will have the desired effect. The bath should be given with great care, and at first one of the resident physicians should keep within call for some time in order to note the effects.

The methods of procedure are described in detail in the chapter on Treatment. (Cf. page 151.) When the patient is once in the tub he is better off than in bed. The duration of the bath may be varied according to circumstances,—from five minutes to several hours, if necessary. When the temperature is high or the patient shows evidences of marked toxæmia, saline infusions are often useful. A tendency to collapse may be combated by the administration of alcohol, coffee, camphor, digitalis, or strychnine. The administration

of narcotics should be resorted to only when the bath has failed to quiet the restlessness, but, if it becomes necessary, small doses of bromide, sulfonal, trional, and in exceptional cases scopolamin may be given. Every means should be employed to keep up the nutrition. Small quantities of milk should be given regularly every two hours combined with raw eggs or bouillon. If the stomach rejects nourishment, nutritive enemata—from two to three in twenty-four hours—are indicated. Sometimes high rectal injections of normal saline solution at body temperature are of great value in preventing collapse.

The pathology of this condition, as far as it is known, will be described in the following chapter.

C. Subacute States of Delirium and Mental Confusion. Amentia (Meynert).[12] Acute Confusional Insanity, Delirious Mania, Hallucinatory Insanity, Hallucinatory Confusion, Paranoia Dissociativa (Ziehen).—The distinguishing features in the forms of alienation to be described under this head are clouded consciousness, interference with associative memory, hallucinations and delusions, as well as anomalous emotional states, such as apprehensiveness and fear. No sharp line divides this from the group of cases just described. The malady, when uncomplicated, runs its course in from six or eight weeks to several months, and does not include any conditions that are to be regarded as belonging to other forms of alienation. The line between the more protracted cases of the acute delirium and these clinical forms can only be drawn arbitrarily, as there are no distinctive features. Although individuals may suffer from more than one attack, many of the so-called recurrent cases not improbably represent phases in other psychoses, such as manic-depressive insanity, dementia præcox, dementia paralytica. A great many of these confusional states can only be differentiated from the acute delirium by their more prolonged

[12] Meynert, Die acut. halluzin. Formen des Wahnsinns u. ihre Verlauf. Allgemein. Zeschr. f. Psych., xxxviii. Jahrbuch f. Psych., 1881. Chaslin: La confusion mentale primitive, 1893. Del. Greco: Sulle varie forme di confusione mentale. Il Manicomio moderno, 1897 and 1898.

duration. The older authors, particularly Pinel, Esquirol, Georget, Griesinger, Kahlbaum, described a variety of conditions, the majority of which may be included under this head; but it was not until Meynert studied this syndrome that the probable unity of the various clinical pictures became apparent. This conclusion has been more recently extended and confirmed by the investigations carried on concerning the nature of fatigue and the possibility that exhaustion is a factor of specific and fundamental importance in this group of psychoses. Wernicke,[14] however, still emphasizes what he considers to be essential dissimilarities in the varieties of cases forming this group.

The onset of the disease in many cases is not essentially different from that of the acute delirium, especially in those instances in which the malady runs a somewhat prolonged course. After the prodromal period, following one of the causes to which reference will be made later, the patient shows signs of restlessness, slight dissociation in connected thought, mild apprehensiveness, and fear of being left alone, and not infrequently complains of being troubled by unpleasant thoughts or by frightful dreams when he gets to sleep. Sometimes gradually, at other times within a short space of time, the disturbances in associative memory become more marked, the distractibility increasing so that the attention is constantly wandering. Even when asked a simple question, the patient may say a few words and then, becoming oblivious of what was uppermost in his mind, pass to another topic. Distractibility, however, is not the chief feature, as it is in maniacal excitement, in which sensory impressionability is apt to be very great. Sensory impressions easily deflect the patient's attention, but, on account of the clouded consciousness, they do not give a definite trend to the subsequent reactions. On account of the rapid deflections in the attention, memory suffers greatly and, since all sense impressions are evanescent, the patient forgets in a few minutes the events

[14] Grundriss der Psychiatrie, 406.

that have just transpired. The face sometimes assumes an anxious expression; marked tremor may develop and often slightly incoördinated and involuntary contractions of the facial muscles are present. If the patient is asked to fix the eyes upon an object, the request is not complied with for more than an instant. The disturbances in sensibility, as a rule, are similar to those in the acute delirium and may be considered to be of psychic origin. Gradually the hallucinations become more marked. At first they are generally of a primary character,—flashes of light, sounds of bells or of running water. But soon the ordinary noises about the wards begin to be misinterpreted. The sighing of the wind is evidence of the passing of unseen spirits; the sounds made by patients in other parts of the ward become the voices of friends calling for help. Frequently the patient complains of an unpleasant taste in the mouth, which is regarded as a sign that his food has been poisoned. Shapes of curious animals—snakes, lizards, horrid monsters—are seen. Not infrequently these fallacious sense perceptions result in insane ideas of persecution, and the patient affirms that the nurses and physicians are trying hard to kill him. Sometimes the grotesque phantasms or frightful apparitions suggest the mental disturbances in epilepsy. In the earlier stages the hallucinations are constantly changing. Each new impulse seems to start up a sensory flight of ideas. At times the motor restlessness, which is nearly always present early in the disease, is associated with considerable garrulity, and the content of what is said and the character of the speech reaction may suggest the flight of ideas. But the dulling of consciousness, the lack of agreement between the external surroundings and what is said, as well as the absence of other symptoms, help to distinguish the conversation of these patients from that of the typical maniac. As the disease progresses, the rapid change in the character of the hallucinations and illusions becomes less marked. Certain forms show a tendency to persist, and to these the patient is constantly referring. As the flightiness diminishes, there is a greater tendency shown towards the

PLATE VI



At the time this photograph was taken the patient was in a state of acute mental confusion.

development of definite ideas of persecution or self-accusation; patients refer to themselves as lost souls without hope and eternally damned. If any form of external stimulation affects them, it is apt to increase the states of apprehensiveness or anxiety, so that the dominating force of the hallucinations and illusions becomes overwhelming. The motor restlessness varies from a mild uneasiness to the wildest, most incoördinated and excessive movements. At times the incoördination and the explosiveness of certain acts suggest exaggerated forms of chorea.

The consciousness of the individual is, as a rule, greatly disturbed, although moments of apparent quiet and lucidity may come and go.

The *physical symptoms* of amentia during the earlier and more acute stages do not differ essentially from those of the acute delirium, although the loss of weight is not usually so rapid and the physical signs are less prominent. During the excited period the pulse frequently becomes rapid and small; at times during the course collapse symptoms may develop. The reflexes are nearly always increased; the temperature may rise during the periods of greatest excitement or less commonly falls below the normal.

Course.—The clinical course of the disease varies greatly and is associated with a variety of mental symptoms. The two principal types of the disease are similar to those described under the head of the acute delirium,—an asthenic type and one in which the confusional state is more boisterous and the general motor restlessness greater. To the former belongs the confusional or stuporous amentia of Meynert; to the latter, the hallucinatory confusion, delirious amentia, and the so-called acute hallucinatory paranoia of other writers. The following table, taken from Ballet,[34] gives some idea of the variety of mental states which are temporarily grouped together under this head:

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[34] Traité de la Pathologie Mentale.

Asthenic mental confusion	Cerebral torpor
	Stupidity
	Acute dementia
Hallucinatory mental confusion	Depressed form
	Mixed form
	Systematized delirium

Unquestionably many of the states frequently grouped under this head in reality represent stages of other psychoses. Great confusion in grouping has arisen from the fact that many of the clinical records mention merely the symptoms of a single attack, without giving any information as to the previous history of the individual or as to his condition after leaving the institution.

Termination.—In a large number of cases recovery takes place, although, more particularly in the asthenic types, not a few of the patients die during the earlier stages in collapse. In the former the manifestations suggest a protracted acute delirium. The duration for the most part is between three and six months. Some cases undoubtedly pass over into a chronic paranoiic state which may persist for months and sometimes never entirely clears up.

The *prognosis* depends upon a variety of factors, largely upon the physical condition of the patient. In the asthenic types constant and recurrent attacks of heart weakness are to be regarded as ominous. The persistence of the insane ideas, more particularly when they are well systematized, generally means that the case will run a long course, and the prognosis for ultimate recovery is correspondingly worse. Not uncommonly patients die from some intercurrent trouble. On account of their lowered vitality and poor nutrition, they are particularly susceptible to pneumonia, infections of various kinds, tuberculosis, and so on. A more or less rapid increase in the bodily weight is nearly always a favorable sign.

Incidence.—As happens also in the acute delirium, females are attacked more often than males. Although abroad the disease seems to be of comparative infrequency, according to Kraepelin representing only one-half per cent. of all the cases

of alienation, it is probable that a comparatively large number of cases occur in this country. The same opinion has recently been expressed in regard to the frequency of its incidence in Vienna.

The history of the following case is of interest on account of the occurrence of catatonic symptoms. When the patient was first seen, a provisional diagnosis was made of dementia præcox, but, as the mental confusion and hallucinations gradually disappeared, and a complete recovery without any signs of mental reduction followed, a revised diagnosis of amentia was substituted:

Miss X, aged 32. Nationality, U. S. A. Admitted November 9, 1903; discharged February 15, 1904. Patient confused. History obtained from mother, sister, and nurse.

Family History.—Mother living, rather delicate. Father died of pneumonia at 63. Four brothers living and well. One brother died of "abscess of the brain." Two sisters living, one delicate. Both sisters and brothers are nervous.

Personal History.—Measles, chicken-pox, whooping-cough, and scarlet fever in childhood. No other acute diseases. Strong and well until about 16, when she began to have some menstrual trouble, which has continued off and on ever since. At this time she nursed her grandmother for some months during a severe illness, and this strain was followed by "nervous prostration." She blamed herself for not having done more, but the sister affirms that the patient worried without cause, as there was no reason for self-reproach. Some years after her health was tolerable. For eleven years she was in "ill health." Cause not known. Ten years ago she went to a hospital as a probationer nurse, but she found that she worried excessively and always feared that she had not done things correctly. Eight years ago two brothers had typhoid fever. She nursed them and worried greatly over their condition. One brother died from abscess of the brain following middle-ear disease, and the patient reproached herself greatly, as she thought she could have done something to prevent this. Since then she has never been quite well and has had one nervous attack after the other. Has travelled about a good deal and seen many physicians. Some of them made a diagnosis of hysteria. No especial features were noted beyond these until October, 1902, when she had an attack of sciatica, together with severe pain and loss of power in the arms. She became weak and helpless and her condition caused much alarm. She gradually recovered from the sciatica and spent some months in bed. In the spring of 1902 she was able to be up, but was very nervous. The appetite has usually been poor. She has been subject to headaches for several years. Average weight, 108 pounds.

Present illness began September 20, 1903. She complained of weakness in both arms and apparently was unable to feed herself. In about two weeks this disappeared and the power in her hands returned. When the question came up as to where she would pass the winter, she began again to complain of weakness in her arms. She went to bed and was prescribed for by a physician. Later it was noticed that she was dull mentally and did not seem to comprehend clearly what was said to her about business affairs. She had difficulty in counting money. At this time there were no hallucinations or delusions. Four or five days later, when seen by her mother and sister, a great change was noticed. She seemed to recognize people about her, but talked in a rambling way. She was then brought to Baltimore. While on the train she was restless and hard to control and had an idea that people were being killed.

October 21, 1903: There were some hallucinations of sight and hearing. The fixed ideas relating to certain individuals whom she supposed to have been killed became more pronounced and persistent. When admitted to the hospital, she declared that her father and brother were dead and their bodies were in the next room. She then began to talk about a hansom cab and an instant later spoke about an epigram and later of a monogram. She was able to give her name and age correctly, but was not oriented for place.

November 9, 1903: At night she talked excessively in a loud tone of voice. There was no sense in what she said. Marked distractibility. Pupils large but equal. Tongue heavily furred. On the 10th she was in an apparent stupor, and could not be aroused when spoken to in a loud tone of voice. Hæmoglobin, 60 per cent.

November 23, 1903: The patient was lying in bed on her back with the eyes partly closed and mouth open, snoring slightly. Face expressionless. No marked mechanical irritability of the facial nerve. Patient could be tickled and pressure made over the supraorbital branch without much effect. The toes and fingers could be pinched without any apparent reaction. When the arms were raised, there was a slight tendency for them to remain in the position in which they were placed. No response to passive movement. It was difficult, though possible, to get a response to questions. The voice was very feeble. When the second question was asked, the reply was nearly always a repetition of that given to the first. For a few days following there were periods of restlessness and the patient tried to get out of bed. On one occasion the face, neck, and hands suddenly became cyanotic. There were slight convulsive movements of the face, neck, and extremities. The movements were not violent nor extensive. The patient seemed perfectly unconscious for about fifteen minutes. On the 20th there was slight resistance to passive movement. No attitudinizing. There was disorientation for time and space. She mistook the identity of those about her, talked a good deal, but had no typical flight of ideas. The emotional state was one of more or less indifference. She obeyed simple commands promptly. Distractibility was not very great.

A note made on December 8 states that the patient had had an ex-

cellent work: remained quiet nearly all the time; seemed perfectly normal; memory excellent.

The treatment consisted in injections of normal salt solution, 400 c.c. being given on November 15, after which the procedure was repeated at varying intervals until she became rational. In addition to this she was kept on a strict rest-cure and given wet packs. On February 15, 1904, the patient was discharged cured. Careful examination failed to demonstrate the presence of any mental impairment. Weight on admission, 90 pounds; on discharge, 104½ pounds. Two months after her discharge the patient was reported to be in excellent health.

Age.—The disorder is apt to occur in individuals in the prime of life. Cases have been reported as occurring as early as the ninth or tenth year and some as late as the fifth or sixth decade of life. Nevertheless it must be said that in the latter instances the symptoms were atypical, and on account of the age of the patient it is almost impossible to say that the recorded confusional state was not a part of some senile disorder.

Etiology.—As a rule, the family history in individuals who are afflicted with these acute confusional states is bad, and the fact can be elicited that one or both parents have suffered from neuroses or definite psychoses. Even as regards cases which seem to be of very acute onset, in the majority it will be found that the individual prior to the onset of the disease had been subject to some form of nervous or mental disorder. Not uncommonly we find that such individuals have always been more or less delicate, that as children they have required to be more carefully guarded than other members of the family, and after puberty have been subject to anomalous emotional states, attacks of so-called nervous prostration, and a great variety of symptoms which could belong only to the possessor of an unstable nervous system.

The *exciting causes* of confusional insanity are in a measure identical with those provocative of the acute delirium. Parturition is not infrequently the starting-point of the disorder in the predisposed, and gastro-intestinal disorders seem to be intimately connected with not a few of the cases.[13] For a long

[13] Wagner: Wien. klin. Wchnschr., 1895.

time prior to the outbreak of the malady the patients frequently suffer from poor digestion, anorexia, nausea, constipation alternating with attacks of diarrhœa, and a great variety of disturbances. Next in importance are the acute diseases, particularly the exanthemata, as well as typhoid fever and influenza. Mental and physical shock also play an important rôle, while all forms of trauma seem to favor the development of this psychosis.

Differential Diagnosis.—The recognition of amentia is frequently beset with many difficulties. In the earlier stages of the disease the character of the excitement, the appearance of certain stereotyped mannerisms, the tendency to repeat certain words, and the general mentality of the patient are suggestive of the catatonia of *dementia præcox*. The difficulty in differentiating the two conditions is greatly increased when we remember that these, as well as other catatonic symptoms, may occur during the course of amentia, although they are far less definite and noticeable than in cases of dementia præcox. In amentia there are, as a rule, a greater impairment of consciousness and a more general defect in associative memory. The patient is more confused, less impulsive, and shows considerable difficulty not only in the elaboration but also in the reception of sensory impressions. From cases of *manic-depressive insanity* the differentiation is often difficult, but in genuine cases of mania the flight of ideas has certain specific qualities, described more fully elsewhere, and the interference with consciousness or with the reception of all forms of sensory impressions is less marked. Occasionally amentia may be mistaken for *dementia paralytica*, but the diagnosis is soon settled if on careful physical examination somatic symptoms are detected. As regards *chronic alcoholism*, the history as well as the general features of the two diseases seldom leave the physician in doubt as to the real condition.

The *treatment* of amentia does not differ essentially from that of the acute psychoses. During the periods of excitement hydrotherapeutic measures—full baths, warm packs—saline infusions, careful nursing, forced feeding, and protection of

the patient from self-inflicted injury should be employed. The drugs which may be helpful are the same as those used in other excited conditions.

Pathology.[16]—Practically little is known regarding the pathology of these two forms of alienation. At various times observers have attempted to prove that the acute delirium was a cerebral malady of an infectious nature, while others maintain that it develops purely as the result of an exhaustion of the central nervous system. Bianchi and Pieginino[17] thought they had demonstrated that a special bacillus found by them in the blood and meninges in cases of the acute delirium played an important rôle in the etiology. These observations, however, have not been confirmed by other investigators. Ceni[18] showed that in the early stages of the delirium no micro-organisms were present, and that in other instances where they appeared later in the disease they were of various forms. At present it is generally believed that these micro-organisms do not bear any definite relationship to the mental symptoms, although it is not improbable that they may give rise to secondary infections of a grave character. The nerve elements, as a rule, show considerable alteration. In some instances we meet with a peripheral chromatolysis, more marked in the larger elements, but generally the central or perinuclear disintegration of the chromatic substance involves most of the cell. None of the changes recorded are in any sense specific, and it is questionable how closely related they are to the mental symptoms. Where the patient has suffered from a hyperpyrexia, the

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[16] Cenia, Florent: Ueber Veränderungen an den Nervenzellen bei acuten Psychosen. Rivista di pat. nervos. e ment., fasc. 9, 1900. Binswanger, O.; Berger, H.: Zur Klinik u. patholog. Anat. d. post-infect.- u. Intoxicationspsychosen. Archiv. f. Psych. u. Nervenkrankh., Bd. xxxiv, H. 2, 1901. Hoch, August: On Changes in the Nerve-cells of the Cortex in a Case of Acute Delirium and a Case of Delirium Tremens. Am. Journ. Insan. Traelinson, H. A.: The Pathology of Acute Delirium. Am. Journ. Insan., 1903, vol. lx, No. 9.

[17] Sulla origine infettiva d'una forma di delirio acuto. Ann. di Nevrol., 1893, xi.

[18] Riv. sper. di Fren., fasc. 2, 1900.

changes due to the fever *per se* are pronounced. Some investigators have emphasized a homogeneous atrophy of the nucleus of the larger nerve-cells. This is important not as having any direct bearing upon the specificity of the change, but rather as an indication that cells thus affected can never return to their normal state. The cells in the spinal ganglion and throughout the sympathetic nervous system are nearly always affected. Orr [19] and others have called attention to the fact that there may be marked alteration of the myelin sheath and axis-cylinder, the myelin breaking up into little droplets or oval globules, or in other instances the axis-cylinder being denuded. Personally I am inclined to believe that these changes are more directly the result of the terminal pyrexia than of the alienation. In addition to the changes in the cortex, a variety of lesions in the cord have been described. Turner [20] and Camiar directed attention to the degeneration in the pyramidal columns in many of the acute insanities. Lesions are frequently noted in the kidneys, liver, and heart. These include fatty degenerations of the cells, of the convoluted tubules or the glomeruli of the kidney, of the hepatic cells, and also a degeneration involving the muscular fibres of the heart. It is not at all improbable, as the Italian observers have suggested, that the mental symptoms are the result of an autointoxication induced by a variety of conditions, and that this primary toxæmia so lowers the vitality of the individual that secondary intoxications due to the presence of micro-organisms may result.[21] There are so many doubtful points involved in a discussion of the pathology of these cases that dogmatic statements are out of place. Orr is right in saying that only by attacking the problems concerned from every possible vantage ground can a better comprehension of the nature of the disease be attained.

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[19] Orr, David: A Contribution to the Pathology of Acute Insanity. Brain, Summer, 1902, part xcvii, p. 230.

[20] Journ. of Mental Science, Oct., 1900.

[21] D'Abundo, Agostini: Rivista sperimentale di Freniatria, fasc. iv, 1900.

Regarding the nature of the pathological changes in amentia, practically nothing is known. Lesions similar to those described as existing in the febrile psychoses or the acute deliriums are frequently met with, but these bear little, if any, relationship to the symptoms.

D. Cerebropathia Psychica Toxæmica. Korsakow's Syndrome. Polyneuritic Psychosis. Neurocérébrite Toxique.[22]—Mention occurs in the literature, as early as the middle of the last century,[23] of the mental disturbances met with in alcoholics with accompanying lesions in the peripheral nerves. In this country the subject was referred to by Mills in 1886 and by M. Allen Starr[24] in 1887, but this syndrome was first described in detail by Korsakow,[25] whose name is now commonly associated with this clinical picture. The work of Soukhanoff,[26] Babinski, and others has shown that similar mental disturbances may occur in cases in which alcohol does not enter as an etiologic factor.

The psychic aberration may be briefly summarized as consisting in defects in associative memory, confusion with a marked tendency to confabulate and indulge in pseudo-remin-

[22] Tiling, Th.: Ueber alkoholische Paralyse und infektiöse Neuritis multiplex. Halle a/S., 1897. Meyer, E., u. Raecke, J.: Zur Lehre vom Korsakow's Symptomencomplex. Archiv f. Psych., 1903, Bd. 37, H. 1. Turner, John: Twelve Cases of Korsakoff's Psychosis in Women. Journ. of Mental Science, October, 1903. Miller, Harry W.: Korsakow's Psychosis. Report of Cases. Am. Journ. Insan., lx, No. 4, 1904. E. Dubré: Ballet's Traité de la pathologie mentale, 1903, p. 1122.

[23] Magens Hans, 1849-52.

[24] Middleton Goldsmith Lectures, 1887. Medical News, March, 1887.

[25] Trouble mentale dans la paralysie alcoolique et son rapport avec le dérangement de la sphère psychique dans la névrite multiple d'origine non-alcoolique. Monsieur russe de la psychiatrie et de la neuropathologie, 1887, t. iv, fas. 2. Plusieurs cas de cérébropathie originale combinée avec la névrite multiple (cerebropathia psychica toxæmica): Gazette russe hebdomadaire clinique, 1889, Nos. 5-7. Du trouble mental combiné avec la névrite multiple (cerebropathia psychica toxæmica): Revue russe de médecine, 1889, No. 13, pp. 3-18.

[26] Revue russe de médecine, 1896, No. 14, and Revue de méd., Mai, 1897.

isconces, hallucinations, and delusions, whose character will be presently described, and marked fluctuation in the affective life. In many of the alcoholic cases the syndrome bears a striking resemblance to certain forms of delirium tremens, and for this reason, as well as because alcohol was a causative factor in so many cases, Bonhoeffer and others have referred to the condition as a form of chronic alcoholic delirium. In the instances, which frequently come under observation, where there is a marked disturbance in the functions of the peripheral nerves, we meet with anæsthesias, paræsthesias, or hyperæsthesias more or less directly referred to the distribution of the peripheral nerves, at times an ataxic incoördination, an atrophy of muscles (amyotrophies), a diminution or complete abolition of the deep reflexes, contractures, permanent deformities due to paralysis and disturbances of the cranial nerves, ophthalmoplegias, etc. These neuritic disturbances may or may not precede the development of the mental symptoms. In almost all of the cases there is a prodromal period during which the patients show signs of some mental aberration, irritability, at times sleeplessness, at other times a marked drowsiness or even stupor from which they are aroused only with the greatest difficulty. After the lapse of a varying interval of time, the characteristic delirium makes its appearance. As a rule, memory for the immediate past is markedly defective, although the individual may retain a relatively exact knowledge of the earlier periods of his life. The attention of such patients is easily gained, but is kept with difficulty and only imperfectly. The tendency to confabulate and indulge in pseudo-reminiscences is extraordinary and is one of the most characteristic features in the majority of the cases. Such patients will frequently narrate long tales having every semblance of truth, and yet upon investigation it will be found that they have no substantiation in fact. The sense of recognition may be greatly impaired; the patients do not know those about them, forget the faces of members of their own family and friends, and not infrequently show marked deficiencies in spatial and time orientation. Not infrequently cases are met

with in which the lacunæ in memory do not seem to follow any rule, the patient remembering, without any particular reason being evident, certain events and situations while apparently completely oblivious of others. The confusion which exists and is characteristic of a large number of the cases depends upon a great variety of causes, a great part of it being in all likelihood referable to the disturbances in the peripheral tracts and sense organs. The hallucinations and delusions in a measure resemble those present in other toxic states. Those connected with the visual, tactile, and more rarely the auditory sense are met with. Frequently the first assume the form of visions. In the beginning these come to the patient only at night, but as the disease progresses they become more intense and are present also during the day. They may or may not be of a terrifying character, giving rise to states of great apprehensiveness or anxiety, and sometimes assume fantastic, bizarre characteristics so commonly met with in the toxic and alcoholic deliria. The mental enfeeblement is more or less marked. As a rule, this impairment is general and not limited to any specific function. In opposition to the view maintained by certain writers, I am inclined to believe that the critical faculties are always impaired, and for this reason the patients are more or less credulous and open to suggestion. Except in the severest forms the patients retain some degree of insight into and appreciation of their own condition, not infrequently affirming that the defects in memory and perception incapacitate them for the performance of all ordinary duties.

The emotional states vary. Sometimes the patient is exhilarated and the condition may simulate the so-called classical type of paresis. In others there is depression, although there is an absence[87] of the self-accusation noticed in true melancholia.

The clinical forms of the disease vary considerably, and

[87] Starr, M. Allen: Organic Nervous Diseases. Lea Brothers & Co., New York and Phila., 1903, p. 124.

in making an attempt to differentiate them we must bear in mind the fact that certain syndromes now included under this head may eventually be found to belong in another category. Ballet describes the following clinical types: (1) An *amnestic form*, in which the chief feature is the pronounced disturbance of memory. Individuals so afflicted show scarcely any power of recollecting or redeveloping events that have transpired only a few minutes before. The conversation gives evidence of the extraordinary tendency to indulge in pseudo-reminiscence. (2) The *confusional type*. There is a greater interference with consciousness, and the patient is more or less apathetic and indifferent to his surroundings, responding feebly, or at times not at all, to stimulation. (3) The *delirious form*. Here the psychosensorial super-production is marked. Hallucinations are varied and, although evanescent, at times possess great sensory plainness. In the more protracted cases the fallacious sense perceptions give way to organized and more or less systematized ideas of persecution or negation and a systematized delirious state develops. (4) The *emotional type*, in which the apprehensiveness, anxiety, phobias, and exaggerated emotional reactions give a decided coloring to the whole clinical picture and in which the symptoms come and go in an episodic form. (5) The *dementing type*, in which there is a still greater interference with all forms of associative activity and less reaction to external stimuli. These conditions bear a striking resemblance to the stuporous states in typhoid fever, meningitis, etc. This asthenic dementing form may terminate more or less rapidly in death.

Duration.—The duration of the disorder varies within wide limits,—from a few weeks to several months. Certain writers hold that complete recovery sometimes takes place, an affirmation which I am at present unprepared either to accept or reject. Unfortunately, many of these patients, who have been treated in general hospitals or institutions devoted to the care of the insane, have not been carefully examined prior to their discharge, and the entry "discharged cured" is frequently made on the history without any details of the examination

being recorded. Although on superficial examination these patients may be apparently well, it is probable that a more detailed examination would reveal the persistence of some slight psychic defect in the majority of cases. Patients not infrequently die during the delirium from some intercurrent complication.

Etiology.—A great variety of opinion is still entertained regarding the causation. The disease undoubtedly is more common during the prime of life, but it may occur in children as well as in old people. Some writers affirm with great positiveness that women are more susceptible than are men (Chotzen), whereas Soukhanoff and Boutenko[28] in a total number of 192 patients found 112 males and 80 females. That the syndrome is undoubtedly the result of a toxæmia is generally conceded,[29] but the nature of the poison, which in some instances affects the central nervous system and in others also the peripheral nerves, has not yet been determined. Although at first alcohol was supposed to be an etiologic factor in all the cases, it is now known that a similar if not an identical complex of symptoms can develop as the result of other causative agents. Nevertheless, although the condition comes on occasionally after typhoid fever, tuberculosis, gastro-enteritis, and toxic conditions due to lead, arsenic, etc., the majority of cases are noted in alcoholics. Within the past decade numerous observers have called attention to the importance of tuberculosis, not only as a causative factor in polyneuritis, but also as giving rise to mental symptoms similar to those just described. Diabetes and various disturbances in the functions of the kidney and liver are also known to be associated with a similar group of symptoms. The work of Klippel, Ballet, Gilbert, and others has added particular emphasis to the importance of hepatic insufficiency as a factor in the etiology of similar conditions.

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[28] Serge Soukhanoff and André Boutenko: A Study of Korsakow's Disease. Journ. of Ment. Pathol., 1903, vol. iv, pp. 1–33.

[29] Miller, Harry W.: Am. Journ. Insan., lx, No. 4, 1904.

Differential Diagnosis.—It is often impossible in cases where there is a marked alcoholic history to distinguish this condition from the more protracted forms of delirium tremens, but sufficient has already been said to indicate the differences in the clinical picture between these and the typical cases of alcoholic delirium. As many of the cases present symptoms—such as impaired tendon reflexes, a diminished or absent light reflex, speech disturbances, and others—which suggest general paresis, the differentiation of these two conditions is frequently beset with many difficulties, but the disorientation, confusion, interference with consciousness, more or less evanescent character of the hallucinations, and the typical defects in memory are significant. The disturbance of the mental faculties in Korsakow's psychosis is apt to be more or less episodic, and not steadily progressive as in dementia paralytica. Protracted remissions and the apparent cure, with a disappearance of the prominent physical and mental symptoms, speak strongly in favor of the former condition.

The features that distinguish it from manic-depressive insanity and functional psychoses are, as a rule, fairly characteristic, as in Korsakow's syndrome there is a greater interference with consciousness, a more specific defect in memory, greater confusion, and more marked physical symptoms. An examination of the cerebrospinal fluid often gives negative results, but in certain instances, particularly where there was considerable disturbance in the functions of the liver, the fluid was decidedly colored and in cases reported by Castaigne and Gilbert biliary pigments were found to be present.

Treatment.—The treatment of these cases is largely symptomatic. As soon as the diagnosis is made, the patient should be at once isolated and kept in bed. The diet should be restricted to milk or other liquid nourishment. If the neuritic complications are marked, they may be combated by the use of ice-bags or hot applications, the physician being guided by the comfort of the patient. If these measures do not relieve the pains, the administration of bromides or chloral or injections of morphin may be resorted to. The warm packs and continuous

bath frequently give most satisfactory results in relieving symptoms. Great care must be taken to see that the bowels are kept well regulated and the urine should be carefully examined and any evidence of beginning nephritic complications should be watched for. In the asthenic types of the disease it is necessary to resort to stimulation and forced feeding. Alcohol, caffein, or strychnin may be administered according to indications. During the period of convalescence the patient should be kept as much as possible in the open air, and even during the height of the disease, if he is reasonably quiet, his bed should be moved out on the porch. All forms of physical or mental exertion should be carefully avoided during convalescence. As soon as the mental condition of the patient permits, massage may be given. After he is well enough to be discharged from the hospital, the patient should be strongly urged to take a prolonged vacation. A sea-voyage, or a residence in a locality where the climate is not too stimulating, or subject to too great variations in temperature, will generally do much towards preventing a relapse and strengthening the physical and mental powers.

Pathology.—Where lesions in the peripheral nerves have been present, we find the histological conditions which belong to a neuritis. According to Gombault, the primary lesions consist in a segmental perisaxial neuritis. Parenchymatous changes—multiplication of the nuclei, swelling of the protoplasm, fragmentation, degeneration of the myelin—have been reported by numerous observers. For a more detailed description of these the reader is referred to the various monographs upon the subject. In some cases the membranes, especially the dura, are markedly affected. A great variety of changes have been described as occurring in the cerebral cortex, basal ganglia, and cerebellum. In some instances in the cortical cells there is a peripheral chromatolysis, but in most of the larger cells there seems to be a tendency towards a central disintegration of the Nissl bodies; in fact, both of these changes are almost always found. In the more chronic cases there are alterations in the neuroglia. In the more acute forms, those which simulate

general paresis, there may be evidence of mitosis in the nuclei, with swollen cell bodies, but, as a rule, the changes are more chronic in character and are largely restricted to an increase of the neuroglia fibres. There may be some disappearance of the fibres in the cortex, particularly of those in the tangential layer, but this is not nearly as marked as in general paresis and other psychoses. In addition to the changes in the central nervous system, lesions occur in nearly all the internal organs, so that the general picture of the pathological changes strengthens the view derived from clinical observation that the symptoms are a result of a general intoxication.

CHAPTER XI

PSYCHOSES THE RESULT OF CHRONIC INTOXICATIONS

VARIOUS substances, after being taken into the system for a considerable length of time, are apt to bring about a chronic poisoning or intoxication, which manifests itself in somatic or less often in psychical disturbances. Occasionally, however, we meet with instances in which the ordinary bodily functions do not suffer any marked disturbance, while the central nervous system seems to bear the brunt of the degenerative process. In a large percentage of the cases that come under the care of the alienist the abuse of alcohol has been the main etiological factor. Hence in view of its great frequency and importance alcoholism will be discussed somewhat at length, while the remainder of the toxic substances which sometimes cause psychical disorders will be dealt with much more briefly.

ALCOHOLISM[1]

GENERAL CONSIDERATIONS.—The effect of alcohol upon the functions of the central nervous system is not always constant, for not only are there individual idiosyncrasies, but at different times in the same person the reactions are subject to considerable variations. Although some discrepancy still exists regarding the results of recorded observations after the ingestion of small amounts, there is a marked degree of unanimity in regard to the symptoms produced by large doses.[2]

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[1] Hirt, Edward: Der Einfluss des Alkohols auf das Nerven- und Seelen-leben. München, 1904. Abderhalden, E.: Bibliographie der gesamten wissenschaftlichen Literatur über den Alkohol u. den Alcoholismus. Berlin, Wien, 1904.

[2] Kraepelin: Ueber die Beeinflussung einfacher psychischer Vorgänge durch einige Arzneimittel. 1892.

Excellent reviews of the whole subject are given by Hoppe[3] and Abel.[4]

The facts obtained from experimental work tend to confirm clinical experience regarding the effects of this drug when taken in fairly large quantities. At first there is a limitation of the intellectual activity, with an increased tendency to motor restlessness. The earlier mental symptoms may be said to consist in a characteristic disorganization of thought, with a more or less complete loss of the power to focus the attention. These symptoms depend in a measure upon diminished inhibition, so that every new sensory stimulus, instead of being repressed, receives more than its due valuation, a fact that becomes apparent in the illogical and foolish conversation so frequently noted in alcoholics. The inclination shown by patients who are under the influence of alcohol to translate all sensory impressions and ideas into immediate action is a form of psychomotor excitement that may occasionally be limited to the speech-centres, but more frequently is general. All muscular movements are in a measure incoördinated, and to a certain degree involuntary. Motives for speech and action are frequently replaced by impulses of a temporary and evanescent character. The attention may be easily gained, but is, as a rule, maintained with difficulty. Although the views entertained in regard to the action of small doses of alcohol upon the form and persistence of voluntary muscular movements are conflicting, this does not hold true for the effects of large amounts. Clinicians generally accept Kraepelin's affirmation that severe muscular effort is made more difficult and does not become easier after the administration of alcohol. Frey's experiments (1896), which seemed to show that following small doses (thirty grammes of whiskey) the capacity of the

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[3] Hoppe: Neuere Arbeiten ueber Alkoholismus. Centralbl. f. Nervenheilk. u. Psych., November 15, 1902. Nr. 154. XXV. Jahrgang, S. 681.

[4] Abel: A Critical Review of the Pharmacological Action of Ethyl Alcohol, with a Statement of the Relative Toxicity of the Constituents of Alcoholic Beverages. Physiological Aspects of the Liquor Problem, vol. ii, 1903.

non-fatigued muscle to react was decreased, while that of the fatigued muscle was increased, have not been generally confirmed. Oseretzkowski and Gluck maintain that after doses of from fifteen to fifty grammes of absolute alcohol there is in general a slight but temporary increase of the functional capacity of the muscle; but this apparent increase is attributed by Kraepelin merely to the disappearance of normal inhibition. More recent investigations seem to indicate that the effect of alcohol is more deleterious to the fatigued than to the non-fatigued muscle. At all events, there is little or no evidence to prove that alcohol in small doses does not increase the dynamic power of the muscle in single spasmodic efforts.[5]

Regarding the action of alcohol upon the psychic activities there is still some discrepancy among observers. It may be said, however, that the higher the intellectual processes undertaken by a person who has been given a certain amount of alcohol the more apparent does the immediate effect of the dose become. In all cases there is a disturbance in the attention. Although the results so far obtained in the psychological laboratories are of great interest in this connection, they have not been sufficiently numerous to permit of any wide generalizations concerning the clinical effects of comparatively small doses of alcohol. As has already been stated, the individual reaction to the effects of the drug varies within wide limits. In many forms of mental disease intolerance for alcohol is an early symptom. This is particularly noticeable in cases of epilepsy, in neurasthenia, and in hysterical individuals, as well as in persons who have been subjected to severe trauma. Following a blow upon the head patients may develop in a comparatively short time a very marked degree of intolerance to the drug. This symptom is particularly noticeable in the early stages of paresis as well as in certain cases of dementia præcox

[5] Chauveau: La production du travail musculaire utilise-t-elle comme potentiel énergique l'alcool substitué à une partie de la ration alimentaire? Comp. rend., t. 132, No. 2, and Alcool et travail musculaire. Académie des Sciences, 21 Janv., 1901.

and arteriosclerosis. The importance from a practical standpoint of determining the existence in an individual of an abnormal intolerance for alcohol is not only of clinical but also of forensic importance. In the courts a distinction is frequently made between what may be termed ordinary intoxication and states which are supposed to be distinctly pathological. Such a discrimination, however, is as impracticable as it is unscientific.

The question is frequently asked: How far are the volitional powers of the individual diminished by the use of alcohol? and, further, if volition is impaired, to what degree does the affected individual become the subject of uncontrollable impulses? In the milder degrees of intoxication it is frequently necessary to decide how far memory is affected, so as to determine whether certain acts committed during a given period may or may not have been remembered. It is generally admitted that alcohol, particularly in large doses, may produce marked disturbances in the field of consciousness, and that certain acts or events that have transpired during these lapses may be either completely forgotten or remembered only in part by the patient. Not infrequently persons who are addicted to the excessive use of alcohol give evidence of considerable intellectual activity without subsequently retaining in memory the slightest trace of what has transpired during a given period of time. In some individuals the physical disturbances associated with this degree of intoxication are marked, while in others they are almost entirely absent. In degenerates, during the period of intoxication the motor disturbances, as exhibited in speech and gait, may not be greatly exaggerated.[6] During a period of intoxication, especially during the prodromal and middle stage, the knee-jerks are increased, while later they are diminished. Gudden[7] affirms that in more than half of the intoxicated persons who were

[6] Forel in Kölle: Gerichtlich-psychiatrische Gutachten. Stuttgart, 1899, S. 216.

[7] Gudden, Hans: Ueber die Pupillenreaction bei Rauschzuständen und ihre forens. Bedeutung. Neurol. Centralbl., 1900, Nr. 23.

admitted to the psychiatrical division of the General Hospital in Munich, during the period of exaltation, there was either a marked impairment or a complete absence of the light reflex. This phenomenon disappeared after the patients had slept off the effects of the intoxication. In some individuals, in whom antecedent to the stage of intoxication there was a certain degree of mental impairment, diminution in the light reflex persisted for several hours after the individual had awakened from sleep. It is important to note that a temporary impairment of the light reflex may occur during periods of prolonged intoxication, whereas after a period of abstinence this symptom disappears.

Various forms of sensory paralysis may occur during a period of intoxication, and these are accompanied by a narrowing of the field of consciousness with amnesia. None of the physical symptoms can be considered pathognomonic.*

Cases of intoxication in which there are extreme motor restlessness and mental confusion, followed by a more or less sudden cessation of the symptoms with a tendency to sleep for several hours, may in a measure be considered characteristic of a degree of intoxication that is usually accompanied by considerable mental aberration. It is important from a forensic stand-point to bear in mind the fact that mere intolerance to alcohol is not sufficient evidence of mental disease to justify the generalization that if this condition exists the acts of an individual are necessarily beyond volitional control. The disturbances in consciousness due to the effects of alcohol have been the subject of considerable investigation. Two groups of cases essentially different from the ordinary form of intoxication may be separated: (1) those in which the character and duration of the symptoms are merely those of the ordinary drunken person, but increased in intensity and duration; (2) cases, generally occurring in eccentric individuals or in degen-

*Cramer: Ueber die forensische Bedeutung des normalen und pathologischen Rausches. Monatsschr. f. Psych. u. Neurol., Bd. xiii, Jan., 1903, H. 1, S. 36.

erates, in which emotional instability, insomnia, and amnesia develop. In some instances a period of maniacal excitement may be added to the other symptoms. A transitory delirious state may form the connecting link between intoxication and a well-developed psychosis. Somnambulism and convulsive seizures are characteristic of other forms. The transitory mental disturbances frequently observed during periods of intoxication have also been made the subject of special investigation by Moeli.* This investigator affirms that cases occur in which the acts executed during the disturbances in the field of consciousness caused by the alcohol are prompted by ideas which have already existed for some time. For example, an individual who for many years had been in comparatively poor physical health, and later had been subject to vague suspicions regarding his wife's fidelity, during a period of intoxication became so suspicious and enraged as to attack and seriously injure his wife. Not only was no memory of the act retained, but there was no recollection of any event that had transpired during the period of intoxication.

Cases of individuals who have shown none of the signs of epilepsy, but who have committed crimes the sole motive for which has developed only just prior to the acute change in the content of consciousness, are not uncommon. Thus, for example, a certain man shot a woman. There was no recollection of the act, although the patient remembered distinctly having met her, but on the following day, after the effects of the intoxication had subsided, he was able to recall some disconnected events that had occurred during the period of temporary abolition of consciousness. This, as well as similar cases, in many respects suggest an epileptiform attack. The stupor and disorientation characteristic of many cases of epilepsy are absent. Partial or complete amnesia, however,

* Ueber die vorübergehenden Zustände abnormen Bewusstseins infolge von Alkoholvergiftung u. über deren forensische Bedeutung. Allg. Zschr. f. Psych., 1900. Bd. 57, H. 2 und 3.

may occur in both instances. Bregmann[28] believes that the most dangerous form of alcoholism occurs in individuals whose nervous systems present a considerable power of resistance for the toxic action of the drug, and, instead of the development of multiple neuritis, delirium tremens or other psychoses, only lapses in morality and intellection are noted.

Confusion still exists in regard to the identity of many of the symptom-complexes which are classed as alcoholic psychoses. At present the clinical forms of the disease may be considered under the following heads:

(1) Delirium Tremens.—This condition is characterized by an acute course and by a group of symptoms essentially different in many respects from those occurring in other delirious states. There is an impairment of the associational activities of the brain, with accompanying fallacious sense perceptions, motor restlessness of varying degree, and a tremor which is in a measure characteristic. During the prodromal period certain initial symptoms are often observable several days before the outbreak of the delirium. The physical manifestations of chronic alcoholism, such as nausea or vomiting, are frequently present. As a rule, some slight motor restlessness, more pronounced at night, is noted, while during the day the patient may complain of feeling ill at ease, of being excessively nervous, and show himself abnormally responsive to external stimulation. In some cases only a vague feeling of apprehension is present or there may be an ill-defined foreboding of some unpleasant occurrence. In the majority of cases the visual stimuli are followed by more intense reactions and are much more apt to give rise to anxious states than those affecting the auditory mechanism. If the patients sleep at all at night, they are very apt to be excited and extremely restless, thrashing about in their beds, talking in their sleep, and sometimes being victims to somnambulism. In place of the feeling of depression during the prodromal period, at

[28] Die Behandlung der Trinker u. der Kampf mit dem Alkoholismus. Schweiz, 1902.

times a slight hypomaniacal condition may develop, that is apt to persist and continue during the height of the delirium.

The transition from the prodromal to the second stage of the disorder can not always be sharply differentiated. In most of the cases the above-mentioned symptoms precede the acute outbreak by only a few days, or they may develop more gradually, culminating in the delirious condition only at the end of two or three weeks. As a rule, the restlessness, the disturbances of consciousness, and anomalies of sensation become greatly accentuated as soon as the second or delirious stage begins. During this period the disturbances of sensation are in a measure characteristic. The patients, as a rule, suffer from visual, haptic, and auditory hallucinations. The occurrence of the last-named variety always indicates a graver prognosis. Although the bizarre, grotesque, or fantastic character of these disturbances is of great importance, the nature of the hallucinations may to some extent be determined by the daily life of the patient prior to the outbreak of the disease; the coachman drives his horses, the butcher is busy in his shop, the artist paints imaginary pictures. On the other hand, his immediate environment may exert little influence in this regard; the patient, while lying in bed in a state of marked delirium, although restrained by the camisole, may consider himself at home and carry on conversations with imaginary friends. Any stimulus of sufficient strength impinging upon the cerebral cortex serves to awaken a chain of memory pictures and suggests situations or events in his former daily life. Not uncommonly there is a tendency on the part of the patients to associate their hallucinations with forms of movement,—they say they are flying in the air, swimming, rising in water, or the like; but, according to Liepmann, these will disappear if the sufferers are kept absolutely quiet. The visual hallucinations may be colored or may be shadow-like visions. As a rule, the forms of rats, snakes, insects, fish, or other animals are prominent features. Not infrequently the visual hallucinations are recognized as unreal. The belief in the subjectivity of these phenomena varies during the height

of the delirium. Very commonly the anæsthesias, hyperæsthesias, and paræsthesias are attributed to unseen agencies,—to spirits or devils.

The cutaneous hallucinations are of various forms, and movement is again a prominent feature of them. Formication —the sensation as of insects crawling over the limbs, body, etc.—is often complained of. The haptic hallucinations are frequently referred to the hands, the face, or the inside of the mouth. The sensory disturbances may suggest to the patient the use of familiar objects. Thus, smokers affirm that they have a cigar or pipe between their lips. Auditory hallucinations, although less prominent, vary greatly in complexity, from simple elementary akoasmata to the more complicated sounds of voices engaged in conversation. Bonhoeffer refers to the fact that auditory hallucinations characterized by a monotone are never observed in delirious patients, but, as a rule, possess a definite rhythmic character. Hallucinations of taste have been reported by some observers.

As has already been mentioned in the chapter dealing with disturbances of sensation, clinicians are almost unanimous in emphasizing the importance of the rôle played by definite lesions in the peripheral nerves in determining the occurrence of hallucinations and illusions. Magnan, Galezowsky, Rose, Kruckenberg, and others have affirmed that elementary disturbances in perception occur during the delirium, but the difficulties that beset the solution of this question are very great. In many cases of delirium it is impossible definitely to prove or disprove the existence of disturbances in the cutaneous sensibility. Bonhoeffer believes that hearing is not impaired; that in most of the cases the anæsthesias are of psychic origin, due to the deflection of the patient's attention; and less frequently are the result of lesions in the peripheral nerves.

These investigations of Bonhoeffer do not corroborate those of Magnan, which tended to prove that amblyopia frequently occurs during the delirious process. Kruckenberg believes that there is often a narrowing in the field of vision, an observation, however, which needs further confirmation. Bon-

hoeffer affirms that as yet there exists little evidence which is indicative of the existence of great impairment in the sharpness of perception. If the latter's observations are correct, it would seem improbable that the localization of the hallucinations is determined solely by lesions occurring in the peripheral organs. The attention during the height of the delirium is seriously impaired, but it not infrequently happens that for a very short period the power of focussing the mental faculties upon a given object is surprisingly great. The disturbances in speech are often well marked. If a patient is made to read aloud, the psychical defects frequently become much more prominent. Paralexia is not uncommon. Slight disturbances in the ocular muscles may increase the difficulty in reading, but when this is the case, with one eye covered the patient is able to proceed with greater rapidity and with fewer mistakes. The rapid flow of ideas which frequently occurs is in a measure pathognomonic. The patients ramble along in their conversation without any apparent definite aim in view. Each new impulse, either intra- or extra-organic, suggests a new idea, which is rapidly replaced by another. This symptom has been referred to as a sensory flight of ideas. Kraepelin and Aschaffenburg have pointed out that external stimuli play a very important rôle in determining the character of the deliria and that the tendency to rhyme and to form sound associations is usually well marked. The suggestibility of the patients, as would be expected, is very great, being generally more pronounced in this than in any other psychosis. The memory for occurrences long antedating the onset of the delirium may be relatively intact, while for the more immediate past it is often a blank. The time sense is seriously disorganized. The tendency to confabulate is decided, but this symptom is also common to other psychoses in which the attention is greatly impaired. The loss of orientation, which is frequently pronounced, in a measure depends upon the patient's falsification of the representation of the external world as well as upon the protean and evanescent character of the sensory impressions; but, as Wernicke has suggested, this is not the sole cause of

the disorientation. In nearly all cases the dissociation of thought is so great that the judgment becomes very defective, although now and again a patient, even during the height of the delirium, will attempt to explain and correlate the isolated and irrelevant ideas which seem to spring into consciousness, thus showing the existence of a suggestion of coördination in the thought processes. The sejunction of the personality varies in degree. Wernicke holds that the falsifications of the external world, or allopsychic consciousness, are very great, while the preservation of the autopsychic is equally distinctive.

In cases in which megalomania is present, there is reason for suspecting the existence of an incipient paresis or some other form of psychosis as a complication. The emotional disturbances in these patients are essentially characteristic. The anxiety, which is frequently intense, may be localized in the chest, but, as a rule, it is much more general in character and dominates all the actions of the patient. The emotional disturbance is apt to fluctuate markedly, particularly in the earlier stages; it often reaches such a degree that anything approaching to a thorough examination is not possible, although not uncommonly the patient may be temporarily pacified. On the other hand, in the later stage of the delirium a well-marked complacency may develop. General psychomotor restlessness is nearly always a prominent symptom, but at times does not affect the speech-centres, so that the patients may not be unduly garrulous, and the field of attention seems to be greatly narrowed. In some instances a patient will sit for hours without uttering a word; while in others the speech compulsion is quite as marked as the general motor restlessness. The tremor—which gives its name to the delirium—appears, as a rule, in the extremities, tongue, and not infrequently in the facial muscles, particularly those connected with speech. It may become so intense that the patient is hardly able to stand or to give audible expression to his thoughts, and under these conditions the speech disturbance is readily recognized as a purely motor disorder and thus may be easily distinguished from that of general paresis.

The period of the delirium is nearly always associated with some elevation of temperature, the origin of which has not been satisfactorily explained, although it may be said that high fever generally indicates the existence of some complication. The pulse varies during the height of the delirium; it may be almost imperceptible and so rapid as to be counted with difficulty. An acute cardiac dilatation may develop during this stage.

During the prodromal period, when the symptoms are vague and indefinite,—somewhat resembling those occurring in the initial stage of any acute infectious disease,—there is at first active skin hyperæmia, which lasts from eight to ten hours and is then followed by a contraction of the superficial blood-vessels. The blood-pressure also increases after the initial hyperæmic stage has passed, and is said to remain high as long as the delirious symptoms persist. Following the rapid pulse of the acute stage, there is a period during which bradycardia is pronounced, the rate falling to 50 beats or less per minute. According to Döllken,[1] this symptom is referable to the exhaustion.

The other physical symptoms are not essentially different from those which occur during any form of delirium. The urine shows no specific changes. Albumin and casts are not infrequently found. The blood examinations are practically negative, although during the period of the most intense excitement Elsholz was unable to find any eosinophiles. Formerly clinicians regarded the symptoms as being merely dependent upon hyperexcitation of the cerebral cortex, but Wernicke and others have recently called attention to the fact that actual psychic paralyses exist.

The *course* of the disease varies in different cases. The prodromal period, although practically never absent, is reduced to a minimum in the cases complicating acute disease. For example, a certain man who for years had been a hard

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[1] Die körperlichen Erscheinungen des Delirium tremens. Leipzig, 1902.

drinker, while at work in a factory suffered a severe wrench of his arm, necessitating removal to a hospital, where almost immediately symptoms of delirium tremens developed, although prior to the injury he had not shown any marked nervous disturbance. In the so-called abortive forms, the patient, after a period of prolonged anxiety, breaks out into a profuse sweat, and after a few days the symptoms gradually subside, the second stage being absent. In some instances the initial stage is succeeded by one in which all, particularly the psychic, symptoms become accentuated. This period ends after from four to eight days in convalescence. In these cases the first or prodromal stage—characterized by nervousness, slight motor restlessness, tremor, sleeplessness, etc.—is followed by the period in which most of the psychical symptoms attain their maximum, and then gradually subside until the stage of convalescence is finally established.

As a rule, the first signs of improvement consist in the gradual subsidence of the hallucinations and delusions and the disappearance of the affective disorders. The motor restlessness disappears; the patient now lies quietly in bed, and sooner or later falls into a deep sleep which may persist for twenty-four or forty-eight hours. After the acute symptoms have completely disappeared, some slight disorientation and dissociation in thought may persist for several days. The patient's actual insight into his condition varies considerably. In some instances the period of delirium is a blank. Other patients remember that they have been ill and not infrequently are able to recall certain of the hallucinations from which they have suffered.

In the so-called adynamic form of the disease, that is occasionally met with, the pulse is compressible and small, the patient is more or less stuporous, sweats profusely, and presents a clinical picture in which it is difficult to recognize any of the specific signs of delirium tremens.

The final outcome of the majority of cases is in recovery, the mortality in the uncomplicated cases being 3 or 4 per cent. In those in which complications exist the death-rate is much

higher,—from 10 to 15 per cent. Pneumonia is most often responsible for the fatal ending. In other instances the chronic gastro-intestinal disturbances become prominent and greatly increase the danger in the disease. Patients suffering from delirium tremens are peculiarly susceptible to infection.

Pathogenesis.—The delirium develops on the basis of chronic alcoholism, so that it may in a measure be regarded as an acute exacerbation of a chronic process. Jacobson[12] has studied 247 cases of delirium tremens with a view of determining certain important points in the pathogenesis. In every instance the patients were found to have presented symptoms of chronic alcoholism for periods varying from one to seven years prior to the outbreak of the delirium. The great majority of these individuals were habitual drinkers; 60 per cent. partook of whiskey, 30 per cent. of beer and whiskey, and 6 per cent. of beer alone. In 14 cases the outbreak of the delirium followed trauma. Elmergreen[13] and Pritchard[14] describe a mild form of the disease, seen in moderate drinkers, and an exaggerated type, or *forme foudroyante*, in those individuals who are addicted to marked alcoholic excesses.

Certain predisposing factors favor the outbreak of the delirium. Among the most important are those that in a measure lower the resistance of the organism,—trauma, fever, particularly pneumonia, operations, marked emotional disturbances or excitement, profound anæmia, conditions of life which lead to states of physical or mental exhaustion,—anything, in fact, that overtaxes the functions of the central nervous system. It is a common experience in general hospitals that patients suffering from delirium tremens are particularly liable to develop pneumonia. Jacobson has affirmed that cer-

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[12] Jacobson, E.: Ueber die Pathogenese des Delirium tremens. Allg. Ztschr. f. Psych., Bd. 54, H. 1 u. 2.

[13] Elmergreen: Delirium Tremens in Moderate Consumers of Alcohol, with Report of Four Cases. Med. Times, July, 1899. The Delirium Tremens in Moderate Drinkers. Journ. Am. Med. Assoc., November, 1900.

[14] Pritchard: Delirium Tremens in Moderate Consumers of Alcohol. Med. Times, 1899, No. 8.

tain symptoms—fever, albuminuria, enlarged spleen—suggest the striking resemblance between delirium tremens and the acute infectious diseases, and he sought to establish a causal relationship between the pneumococcus and the outbreak of the delirium. Similar views have been advocated by Villers,[13] who maintained that in the majority of cases of delirium the pneumococcus was the factor of greatest etiologic importance. Hertz has affirmed that delirium tremens is an intoxication psychosis due to the impairment of the function of the kidneys. In 15 cases of uncomplicated delirium tremens Nonne[14] proved that the cultures taken from the blood were sterile and thinks this sufficient reason for not regarding the delirium as the result of an infectious process.

The peculiarity characteristic of the disease is attributable to the fact that the symptoms occur only in those who have suffered from the effects of chronic alcoholism. It is generally held that the delirium may develop in chronic drinkers when alcohol is suddenly withdrawn, but this view has recently been called into question. Weygandt, while admitting such a possibility, maintains that if they do occur all such cases present very mild forms of the disease.

Most of the recorded clinical observations of cases of delirium tremens have been made during the height of the delirium. The periods of development and decline, during which symptoms may arise that would furnish important clues as to the pathogenesis of this state, have not until recently been studied with sufficient accuracy.

Delirium tremens is generally seen in individuals in the prime of life; it is more frequent in men than in women, but in rare instances children have been known to suffer from it. It is impossible to say, even approximately, the amount of alcohol which will give rise to this group of symptoms, as the individual idiosyncrasies are so varied. As would be sup-

[13] Pathogénie et pronostic du delirium tremens. Bulletin de la soc. de méd. ment. de Belgique, 1898, p. 142.

[14] Allg. Zeschr. f. Psych. u. psych.-gerichtl. Medizin, 1904, Feb. 15, Bd. 60, H. 1 u. 2.

posed, the disease is more common in countries in which whiskey and brandy are taken in large quantities than in the southern parts of the globe where wine is the chief beverage.

(2) Acute Alcoholic Hallucinosis (Wernicke, Bonhoeffer).—The chief characteristic of this group of cases is anxiety associated with comparatively mild disturbances in the somatopsychic and allopsychic fields of consciousness. Furthermore, in addition to hallucinations (similar in character to those occurring in delirium tremens), there can be noted a manifest attempt on the part of the patient to explain and establish some sort of relationship between the various isolated and incongruous facts existing in his consciousness. For this latter reason, the condition is referred to by some authors as acute alcoholic paranoia.

In some instances the intense affective disorders are referable to auditory hallucinations of a threatening or terrifying character. Some patients affirm that every person that enters the room has maligned them or has attempted to subject them to sinister influences, and not infrequently declare that the thoughts of the individuals who wish to do them harm are communicated through the medium of the air or by unseen spirits. The complaint is not infrequently made by the patients that they can keep nothing secret, as their every thought is audible to those about them.

The history of the following case illustrates this clinical type.

Male, single; aged 36. *Had been accustomed to take alcohol for a number of years in considerable quantities*, and has also smoked excessively. For some six months prior to admission he had been drinking more heavily and constantly, frequently taking thirty or forty drinks of whiskey a day. For about six weeks his friends and relatives noticed that he was becoming very nervous. He expressed fear of bodily harm, and had periods of combativeness alternating with others of marked docility. He began to be subject to optical hallucinations, usually of a pleasant type, and to auditory hallucinations. He imagined that he heard all sorts of noises, and occasionally thought that people were planning to do him harm. After his admission to the hospital these symptoms persisted. His conversation was confused and irrelevant and he showed marked disorientation for time and place. The anxiety was not as great as that noticed in

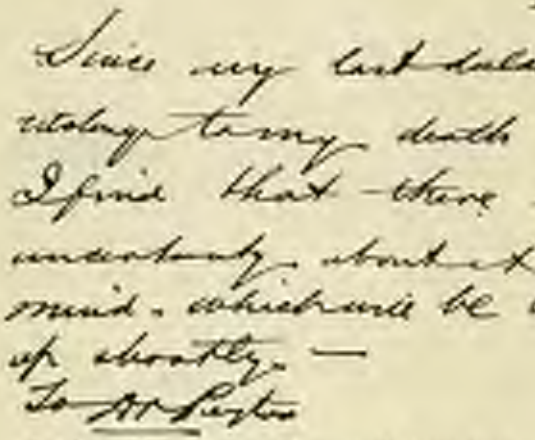
cases of delirium tremens. He recognized objects, but mistook persons. He was able to do simple multiplication rapidly. At times he obeyed orders only slowly, as if confused, but at other times quickly and intelligently. He affirmed that he had died eighteen years before and had been dug up three weeks prior to his admission to the hospital. He said he had felt the snails crawling over him, and that he was "nicely packed in a coffin with straw." He knew who he was; showed little, if any, disturbance in autopsychic consciousness; and responded correctly to a three-word test. After these symptoms had persisted for several weeks, the patient began to have periods during which the hallucinations were less marked. Gradually, but at first for only brief intervals, he recognized the fact that he had been ill, and was extremely nervous and was willing to admit that he was not responsible for what he said or did. After such ameliorations the old symptoms would return again. Gradually the lucid intervals became longer; his bodily weight increased, and finally, after being under observation for three months, he was discharged.



This was written by patient during the period of acute delirium. Disturbances in the functions of the peripheral nerves were the basis for the ideas in regard to death, burial, and resurrection. The patient constantly complained of feeling snails crawling over his legs.

Although the majority of patients make some attempt to explain the hallucinations and delusions, systematization is by no means equally developed in all cases. States of anxiety are frequently a prominent symptom. Sometimes megalomania is present, but this is not characterized by the exaggerated self-complacency that appears in paretics. In marked contrast to what is encountered in cases of delirium tremens,

these patients show relatively little impairment in connected thought. There is less tendency to reckless confabulation, and the power of picking up and retaining new impressions is much less impaired than it is in the delirious cases. Concerning the preservation of the powers of orientation, clinicians differ; they are agreed, however, that neither space nor time sense is intact. The degree of impairment varies in different cases. The hallucinatory disturbances apparently come and go. The patients have periods, lasting a few hours, during which the voices or visions become unusually prominent and then gradually subside. The somatic disturbances are the same as those noted in other forms of alcoholism.[17]

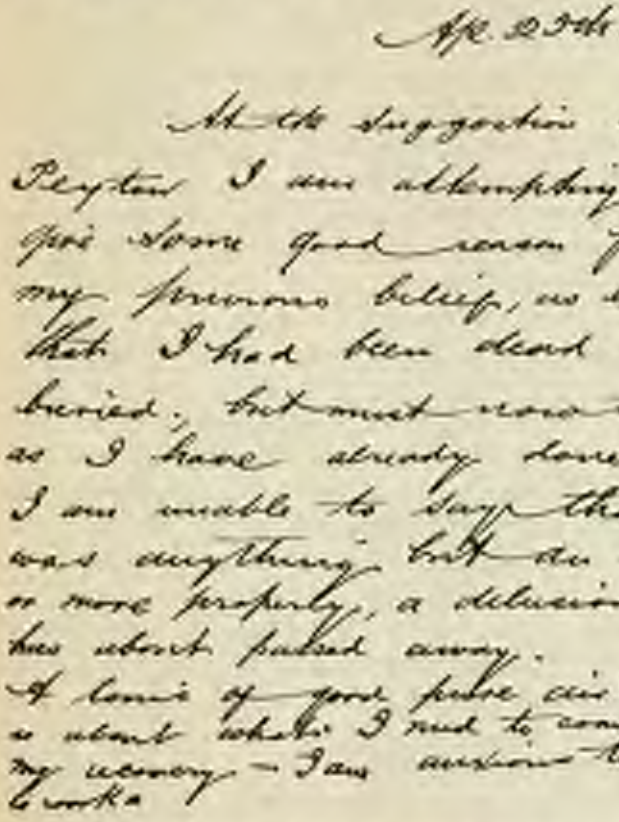


Insight into his condition partially regained. Interval of several weeks had elapsed.

The more the clinical picture corresponds to that of delirium tremens the more favorable is the prognosis. Some clinicians affirm that the occurrence of hallucinations other than auditory is more apt to be associated with the severer and more protracted forms of the disease; while those in which there is marked disturbance in the organic sensations are looked upon as particularly unfavorable. It is not at all

[17] Ilberg: Der Akute halluzinatorische Alkoholwahnsinn. Festschrift zum 50-jähr. Bestehen des Stadtkrankenhauses zu Dresden.

improbable that some of the incurable forms of chronic alcoholism begin with a period in which the symptoms resemble those of acute hallucinosis.



Complete insight. Written just prior to discharge from hospital.

Pathogenesis.—It is interesting to note that, whereas in delirium tremens optic and tactile hallucinations are prominent, in the acute hallucinosis those of the acoustic type predominate. The essential difference in the two clinical pictures has been referred by some clinicians to the individual differences existing in regard to the functional importance of the auditory centres. Such an attempted explanation, however, is unsatisfactory, inasmuch as cases have been reported in which delirium

tremens and hallucinosis have occurred in the same individual. The *differential diagnosis* in typical cases is not difficult. The alcoholic amnesia, the more or less sudden occurrence of auditory hallucinations, the comparatively slight disturbances in associated thinking, the delusions bound together with more or less systematization, are the essential points to be kept in mind. Although the clinical picture described is most frequently associated with alcoholism, it is not improbable that it occasionally occurs in other diseases.

The *prognosis* in many of the cases is favorable. The majority of the patients recover completely. Relapses are, however, not infrequent.

The *duration* of the disease varies from six or eight weeks for the milder cases to three or four months for the severer types.

(5) Paranoic and Dementing States.—The paranoiic states which develop during chronic alcoholism are often divided into two categories: (1) Those which may be looked upon as sequelæ of either delirium tremens or acute hallucinosis; and (2) the so-called primary forms, which are less frequent and have a more unfavorable outcome. Raecke[18] believes that the true chronic alcoholic paranoiic state may be still further differentiated from those cases in which there are long remissions and a relatively favorable outlook. Patients may pass through an attack of delirium tremens and improve mentally and physically in every way except that they are harassed by one or more persistent delusions. As a rule, the insane ideas retain the same stamp of grotesqueness which characterizes them in the course of the other alcoholic psychoses, and at the same time defects in the social and ethical conscience of the patient are nearly always well marked. The patient may affirm that his body is to be burned or that he has been dead and buried. A few of the persistent ideas may be accompanied by others that are transitory in character. Although on superficial examination judgment and memory seem to be

[18] Neurolog. Centralbl., 1903, Nr. 21, Nov. 1, S. 1032.

intact, a more careful analysis of the symptoms will seldom fail to reveal the existence of considerable intellectual weakness. Some patients pass directly from the acute stages of delirium tremens or the acute hallucinosis into the chronic paranoiic state. Particularly characteristic of the latter form of chronic alcoholism are the ideas of suspiciousness and jealousy, which may almost be regarded as specific and are frequently directed against the members of the patient's own family. Individuals in this state affirm that an attempt is being made by members of their family to get rid of them,—that, for example, poison is introduced into their food,—and the paræsthesias or anæsthesias to which they may be subject become to them signs of unseen agencies which are being employed for their torture or destruction. In a comparatively large number of these cases the delusions are sexual in character. V. Krafft-Ebing affirms that the insane ideas of persecution in about 80 per cent. of the male alcoholics are of this character. Not uncommonly there is an hyperæsthesia sexualis. The failure to satisfy this passion frequently enrages the patient, and the wife is often accused of infidelity in its most disgusting and revolting forms. As a rule, these insane ideas are accompanied by great emotional instability, which often expresses itself in violent outbreaks of temper, while in the intervals the patient may be sullen and morose. The erotic excitement is liable to be most intense early in the disease. The hyperæsthesia is followed by the stage in which sexual desire is partially or completely absent. Hallucinations only occasionally occur during this paranoiic stage. The emotional equilibrium of the patients varies. At times there is considerable apathy, or again mild depression alternates with periods of excitement. During the latter stage the so-called "alcoholic humor" becomes noticeable. At times the patient may become excited, particularly when surrounded by members of his family. If these individuals are kept in an institution where they do not have access to any form of alcohol, there may be considerable improvement after several months or a year; the hallucinations may disappear entirely

and the defects in memory become less marked. Sometimes the insane ideas gradually diminish, until the patient gains considerable insight into his own condition. As a rule, however, there is a marked feeling of complacency, and the patient fails to show by any emotional reaction an exact appreciation of his condition. Individuals may remain in this stage for years, periods of remission not infrequently alternating with states characterized by an increase in the number of insane ideas or in more intense periods of depression. The intellectual defects continue, so that these patients are never capable of undertaking any task which involves the expenditure of any considerable mental effort. Occasionally individuals recover sufficiently to leave the institution and to engage in some form of occupation free from any great degree of responsibility. After the lapse of a period of years the dementia may become much more pronounced. As a rule, it is complicated by symptoms which suggest the existence of arteriosclerosis as well as of cerebral softening. Not infrequently cases are met with in which the diagnosis from general dementia paralytica is very difficult. In these instances the motor symptoms—tremor, disturbances of speech, incoördinated muscular movements—are marked. For the most part the Argyll-Robertson pupil and the disturbances of the bladder and rectum, depending upon lesions in the spinal cord, render the diagnosis of dementia paralytica probable. This latter disease is characterized by remissions which are only transitory, while in the pure alcoholic psychoses they may extend over a period of years, so that not uncommonly the disease process is apparently stationary. In some few cases recovery has been reported, but it is highly probable that if a thorough examination were made some psychic defect could be noted.

Alcoholism. Paranoid State with Partially Retained Insight into Condition.—Johns Hopkins Hospital Dispensary. Male, aged 38. United States. Married. Painter. Admitted April 26, 1904. Complains of nervousness and that the people with whom he used to live do not treat him well.

Family History.—Negative for nervous and mental diseases.

Personal History.—Measles, whooping-cough, chills and fever at about 15. Gonorrhœa at 19. No definite luetic history. When he was 20 years old he began to indulge in alcoholic excesses. Every three or four months he would go on a spree. This continued up to five years ago, when he stopped these excesses because he thought they were doing him harm. Has never had delirium tremens. One day he fell in the street and lost consciousness; had a slight "spell." Was taken home by a friend, and has had no similar attack. Married two years ago. Wife well and strong. The patient has not touched any liquor for a year and a half. Smokes a good deal,—twelve pipes a day. It is impossible to obtain a definite history as to whether he was sometimes neurotic, although he himself thinks that he was. He has never had any symptoms of lead poisoning.

Present Illness.—His wife says that about two years ago her husband after a period of abstinence drank excessively and became very nervous and suspicious. He thought that the people he noticed talking to each other on the street were directing their remarks against him. When questioned about this, the patient says that at the time he was not sure that they were talking against him, but now he is confident that they were. The reason for this positive affirmation is that he has so frequently heard what they said and the voices have been so plain that he can no longer doubt. About a year ago he supposed that a number of lodgers at the big boarding-house in which he lived annoyed him. The patient affirms that he frequently overheard these former companions say, "We will lay for him on his way to work and we'll kill him." He knows of no reason for their doing this except that they were patrons of the boarding-house of which he was janitor and, as they were all excessive drinkers, they took great exception to the patient's interference with their sprees. No actual violence was ever attempted by them. Frequently at night, when the patient was lying awake, he would hear them talking in the next room and threatening violence. A curious thing about it all was that the patient at this time never saw his supposed enemies, but only heard them speaking outside of his door. These suspicions have continued pretty constantly, and within the past two years the patient and his wife have changed their place of residence three times in order to escape from his supposed persecutors. The patient is sometimes afraid to go out, as he fears that these enemies will pounce upon him. Occasionally, when he is walking along the street, he first experiences a curious sensation that somebody is following him and then turns to look, when his fears are confirmed by actually seeing some one. The patient's wife, who is a very sensible, phlegmatic person, says that there is no truth in the statements made by the patient. At night he is frequently sleepless and asks his wife if she hears the voices in the adjoining room. He cannot be made to believe that nobody is speaking. When the patient is asked if he will not admit that his present condition might be the result of his former habits, he is quite willing to agree that his nervousness and sleeplessness and generally run-down condition are the result of his excessive indulgence in alcohol, but says that the voices are too real and too constant for him to believe that they too are the result merely of his disordered nervous system.

The patient was well oriented in time and space, was not emotional, gave a connected account of himself, although apparently he had little interest in matters outside of his own immediate condition. He was indifferent to the fact that his wife worried considerably about his present condition, being quite self-centred and somewhat egotistical. As the somatic symptoms have no immediate bearing upon the mental state, they have been omitted from this abstract. When last heard of, the patient had left his home and his wife had no knowledge of his whereabouts.

Complications of various kinds may occur during the course of delirium tremens and the alcoholic psychoses, the acute as well as the more chronic forms. Epileptiform convulsions not infrequently occur. At times the attacks of *petit or grand mal* follow excessive alcoholic indulgence, but in these cases alcohol is the exciting factor, not the main cause. It has already been pointed out that epileptics are markedly susceptible to the effects of alcohol. On account of their emotional instability such patients not infrequently resort to liquor, for the reason that they sometimes feel the need of a stimulant, more especially during the periods of depression either preceding or following the attacks. Many cases of periodic drinking, or dipsomania, may be attributed to epilepsy. In a large number of chronic drinkers a history of fainting spells, temporary attacks of amnesia, mild degrees of aphasia, etc., as well as the severer forms of epilepsy, can be elicited. The association of hysterical symptoms with alcoholism has not infrequently been noted.

It should be borne in mind that alcoholism may be complicated by various diseases. The variety of lesions caused by the action of the drug is very great, and these may in turn give rise to symptoms. In the vascular system we find fatty and atheromatous degeneration; at least one-fourth of all the cases of arteriosclerosis are said by some clinicians to be due to alcoholism. Nor should it be forgotten that arteriosclerosis gives rise to an intolerance of even small quantities of the drug and that this may be one of the earliest symptoms of vascular disease.

Myocarditis and a dilated heart are frequently observed. Various forms of nephritis are met with, particularly the con-

tracted kidney and fatty degeneration of the renal cells. The liver, as well as the gastro-intestinal tract, is nearly always affected. The relationship of gout to chronic alcoholism has been referred to by many authors. Sugar is not infrequently found in the urine of patients suffering from delirium tremens. Rosenberger and Arndt noted the occurrence of glycosuria in the initial stages of the disease,[18] but Reuter found that if the patients were put on a restricted diet the sugar disappeared, and from this inferred that the ingestion of alcohol with an excess of carbohydrates predisposed individuals to glycosuria. The development of a true diabetes from these transitory glycosurias has never been reported. As has been said before, the susceptibility of alcoholics to infection is well known. Recently considerable attention has been directed to the relation of many cases of alcoholism and tuberculosis.[19] The effects of the drug in disturbing the functions of the circulation, respiration, and digestion so lower the resistance of the organism as to make the individual particularly liable to tuberculous infection. This theory receives still further confirmation in the tendency shown by the children of alcoholic parents to fall a prey to the latter disease.

Etiology and Treatment.—As the successful treatment of alcoholism in all forms necessitates a knowledge of the causes that have given rise to the disorder, these two topics may be conjointly discussed. The most important factor of all is the attempt to prevent the spread of alcoholism. Although this is supposed to be a sociological question, its ultimate solution rests largely with the medical profession. As White[21] has well said, "The causes of drinking are infinitely varied and intimately bound up in the heart of man,—at once an expression of his strength and his weakness, his successes and his failures." In a country in which every attempt is

[18] Reuter, K.: Ueber Alkoholglykosurie. Mitteilungen aus den Hamburger Staatskrankenhäuser. 1901.

[19] Stein-Orvosi, Hetilap, 1903, No. 45.

[21] White: Alcoholic and Drug Intoxication. Reference Handbook of Medical Sciences, vol. v, p. 81.

being made to educate the masses, it should not be forgotten that the elevation of an individual out of the sphere into which he was born may impose a tax upon the functions of his nervous system which may eventually expose him to serious temptations. The frequency with which neuroses and psychoses appear in families in which there has been a sudden and rapid change in environment—for example, a removal from country to city life—is a factor of great importance and should receive most careful consideration. The addiction to alcohol is a symptom of a functionally unstable nervous system, and the contrary view entertained by the laity is not justified by clinical observation or experience. Under the stress of the conditions created by modern civilization, many individuals in the social organism, in attempting, as they suppose, to better their condition, are thrown out of sympathy with their surroundings and thus become subjected to excessive nervous strain. Alcoholism, the various drug habits, and the tendency shown by the public to indulge in quack medicines may simply be regarded as different phases of this general mental and physical instability. A great deal can unquestionably be done by physicians in educating the public to mitigate these evils. Careful instruction should be given in the public schools regarding the effects of alcohol; but, unfortunately, much that is now given is based upon imperfect observation, and the facts are so distorted by fanatical enthusiasm that, to say the least, little good has thus far been done. Greater care should be taken in regard to the expression of generalizations in relation to the causes of alcoholism and the best methods of preventing its spread. There is no question of public interest that is in greater need of being studied by sober-minded individuals. The causes are in many instances so complex and so far-reaching in their consequences that a very careful analysis of the facts is desirable before this question can be successfully dealt with.[22]

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[22] Helenius, Matti: Die Alkoholfrage. Eine soziologisch-statistische Untersuchung. Jena: Gustav Fischer.

Therapeutic measures in all forms of acute alcoholism can be directed merely to combating the individual symptoms. In the acute delirious states the drug should be withdrawn with the greatest care. To withhold it completely at once in some instances causes an intensification of the symptoms and gives rise to serious interference with the action of the heart. With care, however, caffein, camphor, and other forms of cardiac stimulants may be substituted as occasion requires. The patient during the acute stages should be kept in bed, preferably isolated so that he may be removed from all forms of external stimulation. The motor restlessness, when present, is best treated by the prolonged bath given under careful supervision; or, if this procedure is not well tolerated, the warm pack may be tried. If the restlessness is not quieted by means of the bath, various sedatives may be used with care,—morphin, the bromides, chloral, and hyoscin. The complications must be treated symptomatically as they arise. In cases in which there is a complicating nephritis, it may be necessary to give the patient hot-air baths. The diet should consist of fluids, preferably milk, given in small quantities frequently repeated. At times the gastric disturbances are so marked that patients will not retain any nourishment, and feeding by enemata must be resorted to. As the patient improves, feeding should be forced as much as possible. As a rule, food is better tolerated when given in small quantities and repeated at intervals of two or three hours. Strychnin, administered either by the mouth or subcutaneously, has been highly recommended. In some cases the drug certainly seems to prove of considerable benefit, but it should not be looked upon in any sense as a specific.

In the more chronic forms it is of prime importance that the patient be made to realize the importance of total abstinence, not only from alcohol but from all forms of stimulants. Each case must be studied upon its own merits, and the exciting causes that have given rise to the tendency to excesses in alcohol must be combated. This frequently necessitates a change in the individual's mode of life and in his environment. Emo-

tional disturbances of any form should as far as possible be avoided. The impulses to take alcohol are as much the outcome of excessive pleasurable feelings as they are of discomfort or actual pain. The majority of patients, when they have recovered from the acute stages, are better off in a mild climate not subject to great variations of temperature than in one in which the changes are excessive and sudden. Much has been written about the use of hypnotic suggestion in the treatment of these cases, and it can not be denied that in some hysterical patients satisfactory results have been obtained, and to its influence must largely be attributed many of the advertised cures,—only a small minority of which, however, are genuine. The alcoholic is a neurotic individual and is particularly open to suggestion. But it should not be forgotten that the use of mental suggestion not infrequently makes the case worse rather than better. The individual should be shown how to successfully cultivate and train his volitional powers and should not be taught to rely upon quack cures. What are particularly needed in this country are small sanitaria, under the direction of thoroughly competent and well-trained medical men, situated in the country within easy reach of cities, where patients of this class may be sent for treatment. The patient should be under constant supervision, should have enough but not too severe exercise; all forms of amusement as well as of mental occupation should be definitely prescribed, and as far as possible these individuals should be taught how to live. Such patients should be kept under observation for a considerable period of time after the symptoms of alienation have subsided. At least a year under medical supervision is necessary before the individual has regained sufficient nerve force to enable him to resist a return to his former habits.

Pathological Anatomy.—For a full description of the changes that occur in the internal viscera in chronic alcoholism the reader is referred to the text-books on clinical medicine and general pathology.

Of the lesions in the central nervous system due to the

action of alcohol none is specific.[2] In the observations made upon animals which have been given repeated doses of the drug extending over long periods of time, in addition to inflammatory changes in the pia, fatty degenerations in the connective-tissue substance and the blood-vessels, and vacuolization, with atrophy of the cortex, have been frequently noted. The opinion is steadily gaining ground that the effect of alcohol alone does not produce a psychosis, but rather gives rise to certain tendencies which are of etiological importance. It is as yet unknown why the drug should affect different portions of the central nervous system in different individuals. As has frequently been pointed out, the locus minoris resistentiæ is sometimes in the vascular system and again in the meninges, the latter being found affected in nearly every case. Generally there are a marked opacity and thickening of the pia over the convexity and not infrequently an ependymitis. Pachymeningitis hæmorrhagica is met with and adhesions between the dura and the skull of inflammatory origin are common. The vessels, as a rule, are affected, although Cramer reports two cases of chronic alcoholism, in both of which during life there had been evidences of considerable dementia but in which there were no sclerotic changes noticeable in the larger arteries. These findings do not substantiate the views of those who maintain that the changes in chronic alcoholism are always associated with marked vascular lesions. In one case reported there was a dilatation of the medium-sized and large arteries and veins with hyaline degeneration of the walls. In some instances the lumina of vessels were narrowed and obliterated. Red and white blood-cells were found between the different layers of the walls of these vessels. The lymph-spaces were dilated, the glia was increased, and many monster spider-cells were found, particularly in the neighborhood of the ves-

[2] Cole. Changes in the Central Nervous System in the Neuritic Disorders of Chronic Alcoholism. Brain, Autumn, 1902. Systematic Examination of the Central and Peripheral Nervous System and Muscles in a Case of Acute Alcoholic Paralysis with Mental Symptoms. Archives of Neurology, ii, p. 855.

sels. In the cases which run an acute course and where the mental disturbances are very severe, the changes in the glia, as a rule, are well marked. In some instances there is atrophy of the convolutions with a disappearance of the medullated fibres.

In cases of delirium tremens Bonhoeffer[24] and Troemner[25] failed to find any specific changes. The former noted a dissolution of the chromatic substance, particularly in the large giant cells of the central convolution. This was associated with granular degeneration and change in the contour of the cell, which argued the existence of a pathological process of great severity. In some instances the nucleus was eccentric; in others it was in its normal position, although frequently shrunken in appearance. The Purkinje cells were normal. Troemner affirmed that the pathological process due to alcohol is more or less diffuse. In the sections examined the lesions in the occipital region, however, were less extensive than in other areas. The subpial glia felting was increased in quantity. The vessels were thickened and there were fatty degeneration of the intima and small-celled infiltration of the media. The inclination to hemorrhages was marked, particularly in the central and frontal convolutions. A spot of predilection was the gray substance about the third ventricle and the aqueduct of Sylvius.

Ether.—Although in some countries, particularly Ireland and certain parts of Prussia, this drug is habitually taken in the form of inhalations, such cases are not common in America, although they are occasionally met with, more particularly among the higher social classes. For a detailed description of the acute ether intoxication the reader is referred to the various text-books which deal fully with the subject. As would be expected, the continued use of the drug has a marked effect not

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[24] Pathologisch-anatomische Untersuchungen an Alkoholdeliranten. Monatsschr. f. Psych., Bd. x, S. 265.

[25] Pathologisch-anatomische Befunde bei Delirium tremens nebst Bemerkungen zur Struktur der Ganglienzellen. Arch. f. Psych., Bd. xxxi, H. 3.

only upon the kidneys, liver, and heart, but also upon the mental faculties, giving rise to hysterical states or hallucinatory disturbances which are apt to be combined with impulsive acts.

Chloroform.—Psychoses occasionally follow the administration of chloroform, but instances in which mental aberration persists for a considerable length of time after the withdrawal of the drug are rare. That such are not unknown, however, is evident from certain references that appear throughout the medical literature.[20] Thus in one instance, after only 15 cubic centimetres of the drug had been taken by inhalation, marked mental aberration occurred lasting for half an hour after the cessation of the anæsthesia. The patient was greatly excited and, although able to leave the room, failed to recognize those about him, mistook the physician for a comrade, and showed marked disorientation for time and place. The delirium lasted for over half an hour and then gradually cleared up. In some cases the tendency to pseudoreminiscence is very marked and disorientation for time and place is nearly always present. A few cases have been recorded in which the confusion lasted for from two to five days. Although delirious states are more common, cases have been reported in which the patients sank into a deep stupor, in one instance lasting for three days. Somewhat similar conditions have been reported after the administration of other drugs, such as ether, ethyl bromide, iodoform.[21] These mental disturbances are supposed to be caused indirectly by an autointoxication resulting from the administration of the drug, but in all probability the predisposition of the individual is a very important factor.

Inasmuch as the manner in which chloroform and allied drugs act is not understood, it is not surprising that nothing definite is known regarding the pathology of these conditions. Heger thought that in profound anæsthesia there was a con-

[20] Schneider, Franz: Beiträge zur Frage der Chloroformpsychose. Psych. Neurol. Wchnschr., 1904, Nr. 46 und 47.

[21] Schlesinger: Die bei der Behandlung mit Jodoform auftretenden Psychischen Störungen. Allg. Ztschr. f. Psych., Bd. liv, H. 6. Nach Deut. med. Wchnschr., 1898, Litt. Beil., Nr. 18, S. 180.

traction of the cell-body and a moniliform condition of the dendrites, a change demonstrable in animals to whom ether, chloroform, chloral, or morphin had been given. Binswanger has advanced the hypothesis that a temporary disturbance in the function of the nerve-cell is caused by the loss of nutritive material due to the molecular changes in the Nissl granules. As a result of these simple disturbances of nutrition, which may occur in states of exhaustion, inhibitory processes are supposed to be initiated which are an expression of an irregularity in the functions of the cell, and the synthetic processes in the cell are thus hindered. Cloetta,[28] following Meyer and Overton, affirms that all narcotic drugs have a common characteristic of going into solution in cell to a degree proportional to their narcotic power; but as the nervous system is particularly rich in substances which are closely allied to the fats, instead of an actual chemical change one of a more purely physical character takes place. They think that the liver has a great affinity for the chloroform circulating in the blood and that this organ, rich in such fatty substances as cholesterin and lecithin, has the power of combining physically with chloroform, ether, and other narcotics of the aliphatic series, such as sulphonal, chloral, and paraldehyde.

Paraldehyde.—As this drug was largely used a few years ago in the treatment of alcoholism and morphinism, it should not be a matter of surprise that the original habit was often exchanged for the more novel vice. The effects of paraldehyde in comparatively large doses are very similar to those of alcohol, but the immediate manifestations are much more quickly observed. Cases are on record in which the continued use of the drug resulted in marked impairment of the nutrition, great loss of weight, and auditory hallucinations, this more or less chronic state being superseded by an acute exacerbation, the symptoms of which were remarkably similar to those of delirium tremens. Visual and auditory hallucinations, as well as

[28] Cloetta, M.: Ueber den Unterricht in der Arzneimittellehre. Münch. med. Wchnschr., 1902, Nr. 1, S. 25. ff.

those of smell and touch, predominate, accompanied by marked tremor, obstinate insomnia, some difficulty in speech, and diminution in the power of orientation.[29] Nevertheless, some observers believe that considering the great frequency with which the drug is administered the cases which present the foregoing symptoms form a very small minority.[30]

Morphinism.[31]—In this country patients become addicted to morphin more commonly than to other forms of opiates, although opium-eating and opium-smoking, unfortunately, are not very rare in America. The development of this habit depends upon a great variety of conditions and each case needs to be studied by itself. Not a few patients gradually become habituated to the vice from the fact that the drug is too often prescribed for long periods of time by physicians for the relief of pain in chronic neuralgia, sciatica, insomnia, and nervousness, or in women for dysmenorrhœa. In many patients, particularly among the wealthier classes, subcutaneous injections are resorted to. As a rule, those who begin by taking opium later on become addicted to the alkaloid.

The mental symptoms of morphinists are varied and in the main have certain general characteristics which aid in the recognition of the disease. In the earlier stages, and before the patient has become a thorough slave to the habit, he is apt to show marked symptoms of hysteria. At times states of apprehensiveness and anxiety develop; the patient readily becomes flustered, often develops mild suspicions, is decidedly pessimistic and hypersensitive, affirms that old friends are forsaking him, that all his actions are misinterpreted. Soon ethical defects become more or less pronounced. A tendency to lie, particularly when questioned in regard to his failing, is developed, and as action becomes more difficult the fabrications increase in

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[29] Behr, A.: Beitrag zur Kasuistik der Paraldehydvergiftung. St. Petersb. med. Wchnschr., 1902, Nr. 14.

[30] Benke: Paraldehyd als Schlafmittel. Monatsschr. f. Psych. u. Neurol., Bd. xii, Heft, 1902, H. 6.

[31] Schnitzler: Zur Casuistik des chronischen Morphinismus. Charité-Annalen, xxvi, 1902.

scope and variety. The sense of duty becomes more and more blunted till it finally disappears. The patient becomes decidedly apathetic, is lacking in all altruistic qualities, and shows himself regardless of all duties except those connected with his own energies. The whole character deteriorates and the defects are in many respects similar to those belonging to certain stages in alcoholism although they altogether differ from others. These individuals will resort to any kind of subterfuge in order to obtain a supply of the drug, and if they have any in their possession, whenever they expect a visit from attendants or physicians, they find various hiding-places for it or conceal it about their persons. The ingenuity shown by some patients in this respect is extraordinary. As would naturally be inferred, all association processes are seriously interfered with, the degree of the disturbance depending largely upon individual idiosyncrasies and the amount of the poison taken. Thus every grade is encountered from slight inhibition or incoherence to deep somnolence or stupor. In the earlier stages and in certain individuals, even when large doses are taken, there may be an abnormal irritability and a tendency to talk, the apparent flight of ideas and general motor restlessness being very suggestive of alcoholism. Hallucinations and delusions may develop, although they are not usually present unless the morphinism is complicated by alcoholism or the effects of some other drug. The visual as well as the auditory hallucinations, as a rule, are of a definite elementary character—bright or colored flashes of lightning, sparks, sounds, the ringing of bells, etc. Moreover, these patients are not uncommonly sufferers from psychæsthesias, paræsthesias, or less frequently hyperæsthesias.

The physical symptoms of these cases in a measure depend upon the individual reaction to a variety of conditions. When the habit has existed for any length of time the patients show an obstinate aversion to food and an utter disinclination for any form of exercise; as a result they become anæmic, and develop a more or less marked cachexia. Furunculosis is not uncommon, particularly in those who use the drug hypo-

dermically. The breath is generally foul, the teeth show signs of neglect, the hair becomes dry and shows a tendency to fall out. As would naturally be expected, there are marked disturbances in the circulation. The extremities are apt to be cold; the superficial circulation is poor; the heart is rapid and becomes more or less irregular. Disturbances of varying intensity in the gastro-intestinal tract are constant, and the patients usually suffer from anorexia, flatulence, and attacks of diarrhœa alternating with obstinate constipation. Even in the earlier stages the pupils of the eyes are contracted and are sometimes reduced almost to the size of pin-points. The reactions for light and accommodation are usually impaired.

Anomalies in the muscular power are generally well marked and are more or less dependent upon the psychic state. The disinclination to exercise or to make any effort is reflected in the general character of the patient. The muscles become flaccid, the gait is hesitating, and all volitional movements are more or less impaired. Quite commonly a pronounced intention tremor and in some cases very marked incoördination of all muscular movements and Romberg's symptom develop. In such cases, however, it always becomes necessary to exclude some complication. The disturbances in sensation are varied and are largely of central origin. The sexual functions are usually diminished, although in rare instances a condition of excitability has been reported. In addition to the symptoms already described a few observers have called attention to the occurrence of epileptiform attacks as well as those suggestive of pseudo-angina. Variations in temperature, with occasional rises even to 39° or 40° C., are not uncommon in morphinomaniacs, but since experiments on animals would indicate that injections of morphin are followed by a lowering of the temperature, we must infer that in some cases at least such rises are due to a localized infection following a careless injection. Nevertheless, in other cases the febrile disturbances must probably be regarded as the result of secondary intoxications due to the gastro-intestinal disturbances. These individuals usually in

the end die of some intercurrent trouble, the cachexia being often a very important factor.

Delirious states, particularly a form closely resembling delirium tremens, may develop. Sometimes late in the disease coma or convulsions supervene. During the period of abstinence, particularly if the individual has been addicted to the use of the drug for any length of time, the untoward symptoms are temporarily liable to be greatly exaggerated. The patient becomes excessively irritable and gives vent to outbursts of temper; the gastro-intestinal disturbances increase and in some cases there develop visual and auditory hallucinations with marked delirious states, accompanied by suicidal and homicidal impulsions.

The *treatment* of these cases is very difficult and frequently is a severe tax upon the patience and ingenuity of the physician and the nurse. When the insidious effects of the drug upon the mental and physical state of the patient are remembered, it becomes clear that a cure cannot be accomplished except after a long time. When large quantities of the drug have been taken daily, in private practice the gradual, and not the sudden, withdrawal is indicated, since the latter is apt to be accompanied by severe and at times dangerous effects. If, however, it is possible to place the patient in a hospital before beginning the treatment the morphin may be stopped at once.[22] Isolation is absolutely necessary. If he remains at home, the patient must be secluded, if possible, from all members of his family and from his friends and placed in charge of thoroughly competent nurses who must be fully impressed with the importance of the fact that such individuals will resort to every possible subterfuge in order to obtain the drug. In what may be termed the expectant treatment, while the drug is being gradually withdrawn, the various symptoms must be dealt with as they arise. A milk diet—small quantities being given every two hours—is at first preferable. If the milk is not well borne by the

[22] Halleck, M. S.: Cases of Morphinism in which the drug was immediately withdrawn. Medical Record, 1903, vol. lxxi, No. 15, p. 572.

stomach, broths, albumen, and plain soups may be substituted. The bowels must be carefully regulated and any attacks of diarrhœa, which may occur, must be checked as soon as possible, inasmuch as they soon bring about a weakening of the patient. All forms of stimulants except in emergencies, such as weakness or irregularity of the heart or an imminent collapse, are contraindicated. In the very severe cases, however, caffein, digitalis, whiskey, and strychnin are sometimes beneficial. The restlessness and delirium may be combated by the warm pack or the continuous bath given with great care. Occasionally the administration of sedatives becomes necessary, but these should be withdrawn at the earliest possible moment. As the nutrition of the skin is generally seriously impaired, care should be taken that bed-sores do not develop.

During the early stages of the treatment, particularly in the severer cases, in addition to isolation and rest in bed, forced feeding becomes imperative. Gradually, as the patients gain mentally as well as physically, they may be allowed to get up, at first for short periods of time. At this period the cold pack, cold sprays, massage, or gymnastics under medical supervision are of great advantage. As soon as the patient is able to go about, it is desirable that he should be sent to some small sanitarium in the country, where he may have a restful life, good food, plenty of fresh air, and strict medical supervision. In this connection, however, a careful choice is necessary, since not every institution which receives these patients supplies sufficient medical care, and in some cases the environment of the patient is anything but satisfactory. Under no condition should the physician permit a return to the ordinary surroundings and avocation until a very considerable period of time has elapsed after the giving up of the habit. If it is necessary that the patient should return to a life where there is mental and physical strain, to speak of a complete recovery until at least a year has elapsed is utterly ridiculous. If, however, it is possible to surround him with conditions which will allow him to lead a healthy life, in an environment which does not impose too great a tax upon his physical or mental reserve force, he may be per-

mitted to do so at an earlier time provided it is possible to continue the medical supervision of the case.

Recently the administration of hyoscin has been highly recommended in the treatment of morphinism, but even small doses cause alarming symptoms in some patients.[33] Camphor has also been given as a substitute with varying results.[34] Livingston [35] recommends ergot very highly in the treatment of alcoholism and morphinism.

Cocainism.—The conditions which lead to the development of the cocain habit are as complex and varied as those which give rise to morphinism. When cocain was first introduced, it was sometimes prescribed as a remedy for the morphin habit, and the result in a large number of cases was that the patient gave up the former to acquire the latter vice. As a rule, the cocainism is not generally accompanied in the early stages with the pronounced symptoms that mark the addiction to morphin. We do, however, meet with restlessness, irritability, a certain degree of insomnia, loss of appetite, and, if the habit is persisted in for any length of time, the individual may become subject to choreiform movements, anomalous emotional states characterized by outbreaks of temper and, in the severer cases, transitory delirious states with auditory and visual hallucinations. On the other hand, if addiction to the drug continues, the manifestations increase in intensity with more rapidity than in the morphin habit.

The *physical symptoms* accompanying the mental disturbances usually consist in marked tremor, sometimes great pallor, profuse sweating, cold extremities, and most commonly a rapid and small pulse. The pupils are usually dilated. At times these patients are subject to attacks of syncope and in some instances

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[33] Petry: Drug Habit. Med. News, 1902. Crothers, T. D.: Hyoscine in the Treatment of Morphinism. The Quarterly Journal of Inebriety, 1903, vol. xxv, No. 3, July. Rosenberger, C.: The Hyoscine Treatment of a Morphine Habitué. The Medical News, November 29, 1902.

[34] Erlenmeyer: Therapeut. Monatsh., 1903, Februar. Hofmann: Therapeut. Monatsh., 1903, April.

[35] Medical News, March 5, 1904.

epileptiform convulsions supervene. Confirmed habitués, when under the immediate influence of the drug, seem to be impervious to any sense of fatigue and to have a craving for the discharge of nervous energy, which is exhibited both mentally and physically. Not uncommonly we meet with various disturbances of sensation, generally anæsthesias, although paræsthesias and hyperæsthesias are not rare. At times, in addition to the auditory and visual hallucinations, to which reference has been made, the patients are subject to psychomotor hallucinations and curious disturbances in the organic sensations, so that they feel as if they were floating in the air, balancing on the edge of a precipice, and so on.

As regards *treatment*, what has already been said in regard to morphinism holds good with appropriate modifications for the cocain habit.

Bromism.—Not infrequently the alienist has opportunities of observing the symptoms produced as the result of the excessive administration of some form of the bromides. In fact, the somewhat reckless manner in which these drugs are given in all forms of nervous excitement or depression makes this group of cases comparatively large. As a rule, the mental disturbances are characterized by a delay in the elaboration of incident stimuli and an impairment of all of the more complicated volitional acts. When the symptoms are pronounced, the patient often speaks in a low, monotonous tone, only replying to questions after a considerable delay. When asked to exert himself in any way, he shows a marked inhibition in connection with the execution of the muscular movements. At times these more elementary symptoms are complicated by marked defects in memory amounting at times to more or less complete disorientation, confusion, sleepiness, or stupor, while associated with these are certain physical symptoms, such as vertigo, ataxia, epileptiform attacks, and various signs of disturbances in the gastro-intestinal tract.

Tobacco Intoxication.—At the present time we understand very little about the nature of tobacco poisoning, and it is probable that many of the deleterious effects attributed to nico-

tin are due to one or more of the various derivatives of the plant. Although it is frequently stated in text-books that the excessive use of tobacco may give rise to marked mental disturbances, such as delirious states and subacute or chronic hallucinatory paranoiic conditions, it is doubtful whether the drug is ever the sole cause of a definite protracted mental aberration. The conditions which result from the excessive use of tobacco in any form are well known. They vary in different individuals from mild gastro-intestinal disturbances to more severe symptoms, with loss of appetite, nausea, vomiting, associated with disturbances in the circulation, such as a weak and rapid, irregular, or intermittent heart. Individual idiosyncrasies for tobacco are not uncommon. In some cases the smoking of a single cigar renders certain people markedly depressed mentally for several hours.

Ergotism.—The chronic intoxication the result of the ingestion of ergot, although observed in Europe, particularly in South Germany and Italy, is practically unknown in the United States. The symptoms induced by continued doses of this poison may resemble those encountered in tabo-paresis.

Lead Poisoning; Saturnism.—As long ago as 1771, Dehane[36] called attention to the fact that mental disturbances sometimes appear in individuals who have been poisoned by lead. The first definite attempt, however, to establish a causal relationship between the disturbances in nervous functions and lead intoxication was made by Tanquerel des Planches.[37] Since that time investigators have discovered many interesting facts which have an important bearing on this question. The peripheral forms of paralysis will not be discussed here. The alienist is more particularly interested in the mental disturbances, which are generally spoken of under the head of lead encephalopathy and in the main present certain characteristics in common. Sometimes the mental symptoms are ushered in by

[36] Ratio Medendi. Paris, 1771.
[37] Traité des Maladies de Plomb ou Saturnine. Paris, 1840.

epileptiform attacks (Judd,[18] Oliver[19]). In some instances the epileptiform attacks are followed by apoplectiform seizures, which may have a rapidly fatal ending. Another group of cases belonging to the delirious form are characterized by a more or less acute onset. The prodromal symptoms are apt to be those usually associated with lead poisoning—constipation, lead colic, etc. Later the patient begins to complain of severe headache, loss of sleep, disturbances of vision, and still later of more or less active hallucinations. In the cases characterized by a slower course paresthesias precede the more acute period of delirium. During these attacks periods of profound coma may or may not occur. Another form of lead paralysis is represented in the types either associated or identical with cases of dementia paralytica.

The manner in which the poison acts has not as yet been satisfactorily explained, although a variety of hypotheses have been advanced. By some investigators it is supposed that the lead produces a true cerebral anæmia giving rise to headaches, vertigo, sensorial troubles, delirium, etc. Jaccoud believed that this poison showed a particular affinity for the brain. The general consensus of opinion favors the view that the lead may simply be regarded as an inciting factor, generally in those who have already shown some predisposition to alienation.

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[18] Judd, W. R.: A Case of Lead Encephalopathy. Brit. Med. Journ., 1904, April 16.

[19] Clifford Allbutt's System of Medicine, vol. ii, p. 988.

CHAPTER XII

PSYCHOSES ASSOCIATED WITH IMPERFECT FUNCTIONING OF THE THYROID GLAND[1]

The mental disturbances associated with disordered functions of the thyroid may be divided into two groups: (1) Those due to diminished function,—myxœdema and cretinism. (2) Those due to hyperfunction,—exophthalmic goitre.

Myxœdema.—Gull in 1873 first called attention to certain physical and mental symptoms occurring in women in association with disturbances of function in the thyroid gland. These observations were extended to male patients by Ord, who proposed the term *myxœdema* to designate this condition. Several years later Charcot and Ballet added greatly to the clinical knowledge of this disorder; but it was not until the operative experience of Reverdin in 1882,[2] of Kocher in 1883, and the important experimental work upon animals of Schiff, Horsley, and others appeared, that its true nature was made clear. From the facts gathered from these various sources it became evident that any marked deficiency in the functions of the thyroid may give rise to symptoms of myxœdema. All these studies were verified and extended by further experience with cases of operative myxœdema or the cachexia strumipriva.

The *physical symptoms* of myxœdema need not be dwelt upon here at length, as they are fully described in the various

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[1] Church and Peterson: Myxœdema. Nervous and Mental Diseases. Philadelphia, New York, and London, 1903. Rodanowitch, J.: Troubles nerveux par insuffisance thyroïdienne. Traité de la pathol. mentale. Paris, 1903. Osler, W.: Practice of Medicine. Fifth Edition. New York, 1903. Also Sporadic Cretinism in America. Trans. of the Congress of American Physicians and Surgeons, vol. ii.

[2] In 1857 Sir[illegible] had called attention to a form of psychic degeneracy occurring in a ten-year-old boy following operation on the thyroid.

text-books on clinical medicine. Peculiar changes in the skin early attract attention. A mucoid infiltration makes its appearance in the integument of the face, extremities, abdomen, nose, ears, and eyelids, as well as in certain other localities. There are well-marked changes in the hair, teeth, and nails, as well as in the buccal, lingual, and pharyngeal mucous membranes. Glandular activity is interfered with. The thyroid is diminished in size in most of the cases, although it is occasionally larger than normal. Sensory disturbances also occur, and areas where the infiltration is marked are apt to be anæsthetic or hyperæsthetic. The pulse is irregular and weak. The patient soon presents the peculiar cachectic appearance more or less characteristic of the disease.

Myxœdematous Alienation.—Mental anomalies are to be found in nearly all cases of myxœdema and are chiefly characterized by marked impairment in connected thinking. Among the milder forms of mental defect usually noticeable are difficulty in thinking, apathy, memory defects, and a tendency to excessive drowsiness. As a rule, the patients become indifferent to their surroundings, do not respond to the action of normal stimuli, and as the disease advances show great impairment of the power of recollection as well as in the elaboration and working up of new stimuli. Wolseley[1] maintains that in cases of myxœdema the spontaneous attention or instinctive selection of some stimuli in preference to others is impaired. Contrary to the general opinion entertained by physicians, this observer thinks that the retentiveness of memory is well preserved while its impressionability is diminished. The chief characteristic of the mental state is the retardation of thought without any impairment in judgment. If the attention of the patient is once aroused and sustained, there is no evident dissociation of the mental processes, while the diminution in the volitional impulses is the cause of the lack of initiative as well

[1] Wolseley, Lewis: The Mental State in Myxœdema. Lancet, April 23, 1904.

as of the striking immobility of face and body so characteristic of the disease. In a comparatively large number of cases hallucinations and insane ideas of varying degrees of intensity may be present. Pilcz[1] has called attention to the fact that the mental manifestations at times are dependent upon the myxœdema and are then symptoms of the disease; in other instances they are merely the expression of a complicating psychosis. That different types of alienation may complicate myxœdema has also been shown by numerous authorities, particularly Berkley, and for this reason the great variety of the mental symptoms which have been observed during the course of myxœdema and which have been said to be specific of the disease is open to doubt. Nevertheless, the fact that certain types of insanity occurring during the course of myxœdema recover completely after the administration of the thyroid extract renders it in the highest degree probable that a specific myxœdematous insanity exists, and therefore not all cases are to be regarded merely as a combination of myxœdema and an independent psychosis. Instances of pronounced myxœdematous insanity are not very rare and have been reported by a large number of clinicians. According to Clouston, the primary changes are delay in the associational processes, vague suspiciousness, and varying degrees of mental depression. In some cases a period of euphoria or maniacal exaltation intervenes, while some writers have reported symptoms of negativism, verbigeration, and various forms of dementia. These last must be accepted with great caution, as the further histories of the cases are not given and their occurrence would suggest a possible dementia præcox complicating myxœdema.

A convenient clinical classification into two categories may be made. In the first, progressive somnolence, torpor, intellectual defects, and not infrequently various forms of

[1] Pilcz, Alexander: Zur Frage des myxödematösen Irreseins und der Schilddrüsentherapie bei Psychosen überhaupt. Jahrb. f. Psych. u. Neurol., 1901, Bd. xx, S. 77.

convulsions and coma, ending in death, form the clinical picture. To the second belong hallucinations of the senses, particularly anomalies of the various organic sensations, as well as disturbances of taste, smell, and hearing. The attacks of mental depression may alternate with those of maniacal excitement, and, in addition to these, states of anxiety associated with visual hallucinations of a very vivid and terrifying character have been noted. One instance has been reported in which there were symptoms of marked mental depression with hypochondriasis and ideas of persecution. The majority of cases in which periods of exaltation and depression occur not improbably are complicated by a manic-depressive insanity. In many of these cases found in the literature the records are too incomplete to justify a positive declaration as to whether the psychosis was an expression of the primary disease or merely represented a combination of two totally different processes. Unfortunately, not a few patients have been under observation only in the wards of a general hospital, whence, upon the subsidence of all symptoms, they have been discharged and reported as cured; but, on account of the lack of further information, it is impossible to say that no recurrence of the mental trouble occurred later on.

In the *treatment* of myxœdema the thyroid extract is, as is well known, a specific. Various preparations may be administered. Concerning the relative merits of these the reader is referred to the text-books on general medicine. In regard to the treatment of the special mental symptoms to which reference has been made, the indications are the same as those laid down for similar conditions. (See Chapter V.)

Cretinism.—By some the word cretinism is said to have been derived from Chrétien, Christian, and referred to the supposed inability of these imbeciles to commit sin. A more probable derivation is from cretira (creatura), a term used to designate an individual whose physical impairment was such as to make him an object of pity.[1] Cretinism is more or less

[1] Ackermann: Ueber die Kretinen, eine besondere Menschenart in den Alpen. Gotha, 1790.

endemic in parts of Switzerland, Italy, France, Sweden, Great Britain, and in a few places in North America (Minnesota, Ontario). Sporadic cases are met with in all countries.[6]

This congenital condition is characterized by mental and physical anomalies which in their totality alone are distinctive. Prominent among the former is the general impairment in all the mental faculties, and among the latter are the changes in the skeleton and the skin and deficiencies in the sexual apparatus. All these changes are more or less directly related to the disturbances in the function of the thyroid gland. The operative causes are largely endemic.

Physical Symptoms.—Among those which have received the most notice from clinicians are the defects in the thyroid gland. In many cases, however, it is extremely difficult to tell from palpation whether there is an actual change in the structure of this organ. This is largely due to the fact that it develops behind the sternum and therefore can be examined only with great difficulty. The general consensus of opinion is that only a certain proportion of these defectives show any abnormalities of the thyroid. Thus, out of 3600 cretins examined in Lombardy only 1125 showed an enlargement.

Among the most striking features are the remarkable defects in the development of the bony skeleton. As a rule, these are not noticed at birth, but become apparent only after the lapse of several months. The disproportionateness in development of the skeleton is not nearly as marked as in the cases of idiots, although sometimes the abnormality of the skull is at once noticeable. Cretins are met with in whom the skull seems to be proportionately smaller. The delay in the ossification and the persistence of the cartilaginous epiphyses in the bones are frequently so marked that the limb of an adult may resemble that of an infant of one or two years. The physiognomy of these patients is very striking, and here again the changes in the bones are very apparent. The nose is usually

[6] Weygandt, W.: Der heutige Stand der Lehre vom Kretinismus. Halle a/ S., 1904.

flat and broad, the orbital cavities are far apart, and the jaws protrude. The skin is less affected than in cases of myxoedema, and this fact has led certain observers to believe that the absence of myxoedematous changes was specific of the typical cretins. More careful investigation, however, has failed to substantiate this view. The hair is somewhat sparse and falls out easily. The nails are defective and, as in myxoedema, there is considerable interference with the function of the sweat-glands. The surface temperature is apt to be below that of the normal individual. The skin has a wrinkled appearance, so that even when quite young cretins may look like old people. Various anomalies are found in connection with the muscles and their mechanical irritability is said to be increased. As would be expected, the internal organs are nearly always affected, particularly the heart and lungs. Anomalies occurring in the sexual organs are common. In some cases even after the thirtieth year no development of the genitals has taken place. In women the breasts are apt to be poorly developed and pigmentation as well as glandular tissue is almost completely absent.

Mental Symptoms.—The primary perceptions are often impaired. This impairment may or may not be due to local causes. Thus, defects of hearing are not infrequently due to the existence of a catarrh or enlarged tonsils, and those connected with taste and smell to pathological conditions of the mucous membranes. The disturbances in the associative memory, as well as in the more complicated mental processes, vary greatly according to the individual case. As yet a satisfactory grouping of the cases is impossible, and the best is probably an empirical division into the apathetic or anergetic and the excitable or erethic forms. All degrees from the severest to the mildest type are encountered. In the worst cases the individual never develops mentally beyond the condition belonging to earliest infancy. There is a marked inhibition of all the psychical activities, of the attention, the power of retaining and elaborating impressions, etc. Sometimes there is great interference with the understanding of speech, and the

patients are capable of learning the meaning of only a few of the simplest words and signs. The existence of such individuals, as in the case of the worst type of idiots, is largely vegetative. Only occasionally are inarticulate sounds produced. In rare instances the involuntary rhythmic movements sometimes noted in idiots are encountered.

In milder cases the individual reaches the stage when he is able to a certain extent to appreciate his surroundings and is capable of being taught to feed and dress himself, but development further than this does not take place. Some difficulty in articulation is present in nearly all the cases. Certain individuals show sufficient mental capacity to go to special schools where they are able to acquire the rudiments of an education. The acquisition of manual dexterity is usually easier than of knowledge acquired from books.

According to Weygandt, the patients may be divided into: (1) dwarf cretins and those of the infantile type, in which the skeletal and mental development do not advance beyond the stage of a child of three or four years; (2) half-cretins, who correspond to the anergetic type but are still capable of being educated; the dwarf features are marked and, as a rule, the patients average about four feet in height; (3) the cretinoids, who still show the habitus, the lack of development, the cretin physiognomy, and the changes in the skin, as well as the mental insufficiency. In all these cases it must be remembered that the disturbances which occur in the various organs are not always of equal degree of intensity, so that the anomalies in the skeleton, skin, and central nervous system may show considerable variations.[7]

Pathology.—The work of Langhans[8] undoubtedly formed the basis for many later investigations into the pathological anatomy of cretinism. In some cases the thyroid shows

[7] Weygandt, W.: Ueber Virchow's Cretinentheorie. Neurol. Centralbl., Nr. 7-8, 1904.

[8] Anatomische Beiträge zur Kenntniss der Cretinen (Knochen, Geschlechtstheile, Muskeln und Muskelspindeln, nebst Bemerkungen über die Behaarung der Leistenen). Virchow's Archiv, 1877, Bd. cxlix, S. 155.

marked atrophy of its epithelium, while in one instance there was a decided hypertrophy of one portion. Tumors have been reported situated to one side of the trachea. The medulla of many of the bones resembles that found during infancy. The ovaries show cystic degeneration. The testicles are atrophic. According to Hofmeister, in animals whose thyroid has been removed no spermatozoa are found. The myxœdematous changes have already been described. The heart and lungs show changes. The spleen, liver, and kidneys are also abnormal. In the cerebral cortex, in specimens prepared with the Nissl stain the nerve-cells seemed to be small and did not stain deeply. The apical processes showed considerable change, being somewhat attenuated and visible for long distances. All the various theories entertained regarding the origin of cretinism cannot be mentioned here. According to one view, it is not at all improbable that through the drinking-water some deleterious organism is introduced into the system which has a particular affinity for the thyroid gland.

As regards the differential *diagnosis*, it is necessary to distinguish between cretins, individuals suffering from other diseases of the thyroid, cases of dwarfism due to other causes, and congenital idiots or feeble-minded persons. In this country this differentiation becomes unnecessary, as only the sporadic cases of cretinism ever develop.

In the *treatment*, removal from unhygienic surroundings and change in the water-supply are important. The brilliant results obtained from the administration of thyroid extract are too well known to need detailed mention here.

Mental Disorders associated with Hyperfunction of the Gland: Exophthalmic Goitre, Graves' Disease, Basedow's Disease.—It has long been recognized that mental disturbances are apt to occur during exophthalmic goitre (Basedow, 1840). The milder forms consist in emotional instability, attacks of more or less depression or excitement with accompanying states of apprehensiveness and mild phobias. The attention is also markedly disturbed, and, on account of the nervousness, it is apparently impossible for

these patients to concentrate their minds long upon any one subject. Another group of cases is met with in which the symptoms are episodic in character, states of depression or excitement alternating; and during these periods obsessions, impulses, and phobias may develop. The hallucinations that have been reported in cases are, as a rule, visual in character and generally of a disturbing or terrifying nature. Ballet[9] recorded cases in which the visual were followed by auditory hallucinations and eventually systematized persecutory ideas developed. Statistics go to show that, although periods of depression may occur, the maniacal symptoms seem to be much more frequent. Jacobs[10] was able to find the records of ten cases in which an acute mania terminating fatally complicated the course of Graves' disease. Hirschl[11] extracted from the literature—from 1862 to the present date—43 cases of insanity complicating Basedow's disease. Of these the majority showed maniacal symptoms, only 6 recovered from the alienation, while 18 of the patients died. Certain French writers, however, particularly Dutil, hold that the occurrence of these psychoses in the course of goitre is somewhat commoner than the above statement would lead us to infer. It should not, however, be forgotten that in a certain proportion they are in reality phases of some independent psychosis, so that after the cases of alcoholism, manic-depressive insanity, and dementia præcox have been eliminated there remains a comparatively small group which definitely belongs to this category. Whether we are at present justified in classifying these forms of alienation as in a measure characteristic of the disturbances of the thyroid gland we are unable to say. The question needs to be more fully investigated, and, unfortunately, the majority of records in the literature are too incomplete to warrant a positive conclusion.

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[9] Des idées de persécution dans le goitre exophthalmique. Soc. méd. des hôp., 1890.

[10] Jacobs, Henry Barton: The Am. Journ. Insan., vol. lv, No. 1, 1898.

[11] Krafft-Ebing: Lehrbuch der Psych. Stuttgart, 1903.

The *treatment* is largely symptomatic. As a rule, the patients if they have become at all excited should be at once transferred to a hospital. There they can be kept in bed on a fluid diet. The administration of sodium phosphate, as recommended by Möbius and others, may be tried, as well as the effects of belladonna. The thyroid extract has been frequently given in these cases, but, although its use has occasionally seemed to be beneficial, it usually makes the condition worse. As a rule, during the periods of marked depression or excitement the patient is much better off in bed, and the diet should be restricted to nutritious and easily digested forms of food. The bowels should be carefully regulated. Warm packs or prolonged baths are often efficacious.

CHAPTER XIII

THE MANIC-DEPRESSIVE GROUP[1]

For a long time alienists have recognized the fact that there are psychoses characterized by maniacal outbreaks recurring with well-marked periodicity and broken by intervening lucid intervals. Moreover, clinical experience has shown that patients afflicted with melancholia later in the course of this disease not infrequently develop maniacal symptoms. But although these two phenomena have been recognized as belonging to a large number of cases of alienation, the interpretations of their clinical significance have not always been in accord.[2] The older clinicians were inclined to attribute too much importance to the mere periodicity which characterized the return of certain psychoses, and even recently Hitzig, Jolly, and Pilcz have maintained that for practical reasons in a number of forms of insanity it is still necessary to consider this as the most distinctive element in their symptomatology. But gradually alienists are awakening to an appreciation of the futility of attempting to establish the existence of a disease entity upon such insufficient grounds as the apparent prominence of some symptoms and the conjectural unimportance of others, and are learning to recognize that to attach too great significance to the more periodic recurrence of individual symptoms is equally unscientific.

A new epoch began in 1851 when Falret[3] described a periodic mental disturbance which he designated as *folie circulaire*. Again, after Baillarger and Falret in 1854, independently of each other, had affirmed that the so-called circular

[1] Hoch, August: Manic-Depressive Insanity. Reference Handbook of the Medical Sciences. William Wood & Co., New York, 1902.

[2] Pilcz, Alexander: Die periodischen Geistesstörungen. Jena, 1901.

[3] Gazette des Hôpitaux, 1851.

insanity was a disease entity, it became evident that hitherto sufficient care had not been exercised in estimating the relative importance of all factors pertaining to the etiology, symptomatology, course, prognosis, and termination of these periods of mental aberration. Moreover, clinical experience had demonstrated that the only logical and scientific method of studying disease was from this broader and far more comprehensive stand-point, and, as a result of these changes of view, less stress was laid upon individual and isolated symptoms, and an attempt was made to give to each event in the disease its just valuation. But as soon as the truth of these underlying principles had been recognized it was found that many cases of so-called simple mania or melancholia, as well as of the mixed forms, have many features in common, and on closer investigation it also became apparent that pure cases of mania or melancholia practically never occur. Kraepelin,[1] imbued with these ideas, grouped together under one head diseases having a common symptomatology with a certain more or less well-marked tendency to recurrence and a similar outcome. One of the fundamental facts that served to direct investigations along this line was that in many forms of alienation a group of symptoms are in the foreground of the clinical picture which formerly had been considered specifically characteristic of the so-called circulary insanities. The presence of a marked degree of mental deterioration in some cases and its absence in others was also an important consideration that influenced the genesis of the views entertained by the Heidelberg school in the formulation of the conceptions of the manic-depressive insanity.

Dementia præcox, including all cases in which there is a characteristic mental reduction, affords a strong contrast to those cases in which the symptoms of excitement or depression, with a tendency to recurrent attacks, may occur, but without the development of any well-marked specific deterioration of the mental faculties during the lucid intervals or as a terminal

[1] Lehrbuch der Psychiatrie, 1896.

dementia. The expression "specific deterioration" must be used with certain qualifications. In the present state of our knowledge we are not justified in assuming that no mental reduction is noticeable in those cases of manic-depressive insanity in which the attacks have recurred at short intervals or have lasted for long periods of time. Not infrequently patients pass through an attack of alienation that in all particulars, except its very protracted duration, resembles manic-depressive insanity. At the end of such a period, when the patients are discharged "recovered," we are frequently unable to say that the mental faculties are quite as vigorous as they were prior to the onset of the disease, and yet if a deterioration does exist it does not bear any resemblance to that occurring in cases of dementia præcox, nor does it have any specific signs by which it may be recognized. In some cases neither the frequency of the occurrence nor the protracted character of the attacks can be considered responsible for the existing mental changes. Cases of the latter group vary greatly, in the intensity of the symptoms as well as in the duration of the lucid intervals. They may be complicated by other forms of psychoses, but in the main it is possible to pick out certain points in the symptomatology and clinical course of the disease which suggest a common basis. It is advisable for the present, in the consideration of dementia præcox as well as in the description of the manic-depressive psychoses, to refrain from designating these two groups as definite disease entities. The present differentiation of these cases is in a measure temporary, but the principles on which it is made are consistent with and not antagonistic to progress.

Before attempting to study the clinical course of the cases which are brought together under the head of manic-depressive insanity, it is essential that there should be as clear and definite a conception as possible of the individual symptoms and of the relation they bear to each other in the clinical course of the disease.

1. Maniacal Phase. *Motor Symptoms.*—In this period the majority of patients exhibit motor symptoms which are

definite and in a measure specific. The one most apparent to the casual observer is the general restlessness. The majority of maniacal patients are never still. In the incipient stages every thought and new idea is immediately translated into action; there is a psychomotor excitability; movement is easy; rest is impossible. The initial symptoms are often characterized by a tendency to have many irons in the fire, to engage in new undertakings, to become unusually strenuous, to be always bustling or seeking for some new outlet for the discharge of excessive energy. Frequently an individual, who has been secluisive or quiet in demeanor, becomes vivacious, never has a moment to spare, is obtrusively animated, plunges into society, is meddlesome, insists on beginning new undertakings without waiting to count the cost. Every psychic impulse, however vague and indefinite, seems to suggest new fields of activity. The excitability is ideational as well as motor in character. In some instances the former in others the latter type predominates. Occasionally cases are observed in which the motor irritability, although excessive, does not seem to affect the speech centres. In other instances the converse is true, and in the absence of other motor symptoms the patient keeps up a steady, uninterrupted chatter. This motor excitability varies greatly in different cases. Sometimes, in the early stages, it may be hardly perceptible, and gradually increases only after a considerable lapse of time to its maximum intensity, whereas in other instances it reaches its full development within a few hours. It may become so intense and diffuse as to implicate all the muscles of the body and incapacitate the individual for the performance of coördinated muscular movements, so that he is unable to leave his bed. Accompanying the incoördinated and involuntary movements there are marked tremulousness and an unsteadiness which occasionally becomes choreiform in type, although, as a rule, the movements are less jerky and impulsive. The tremor in the milder cases is only perceptible in the extremities and tongue and may scarcely be noticeable in the facial muscles. As the intensity of the motor symptoms increases the tremor

becomes more and more marked until the excursions may become so exaggerated as to give rise to considerable uncertainty in all volitional acts. During a maniacal attack the actual muscular strength of patients sometimes seems to be increased, but this phenomenon is referable to the insensitiveness to pain and the absolute indifference to injury which characterizes the conduct of so many individuals during this stage. The exaggeration of the functional power of the muscles is apparent rather than real and depends upon the absence of inhibition no less than upon the recklessness of the individual. During the periods of wildest excitement the patients rush heedlessly about the wards, striking or attacking whoever chances to come in their way, throwing themselves blindly against the furniture or walls, and exhibiting homicidal as well as suicidal tendencies. Associated with these displays of brute force there is nearly always a diminution of the pain sense which is centrally, not peripherally, conditioned.[3] The patients inflict upon themselves all manner of injury without evincing the slightest appreciation of pain. One case is on record in which a patient actually tore his tongue loose from its attachments during a period of maniacal excitement. Even in the relatively mild grades the speech of the patient pretty constantly shows certain definite changes. The compulsion to talk becomes noticeable. The individual who has been more or less reticent and restrained is voluble, flippant, and a mere driveller. Not only is this change noticeable, but the emotional state also fluctuates. An individual who prior to the attack has been more or less stupid becomes witty, sharp at repartee, or a mere buffoon. The tendency to joke, to pun, to form sound associations and alliterations are features that become more prominent as the case develops. In the majority of cases there is the so-called flight of ideas, a symptom which has been described more in detail in the introductory chapters. It is important to note that the steady, uninterrupted flow of

[3] Paton, Stewart: The American Journal of Insanity, vol. lviii, No. 4, 1902.

words is the result of both intra- and extra-organic stimuli. Not only do the words used suggest to the patient new ideas, to which immediate expression is given, but the sound and rhyme associations are also eminently characteristic. External stimuli serve to deflect and give a definite trend to what the patient says. The actual rapidity in the association of ideas is not increased; the flight of ideas is indicative of mental insufficiency rather than over-productiveness.

Hoch has made the suggestion that the use of the term "flight of ideas" to characterize all forms of rapid psychic discharges is in some instances inappropriate on account of the disconnected and irrational character of the conversation. In each case the complex should be analyzed as far as possible, as the causes as well as the variations in this combination of symptoms are not well understood.

In some cases the inordinate desire to write is no less marked than the speech compulsion. The quantity of notes and letters that these persons indite is frequently astounding. The way in which they express themselves and the character of the association of ideas bear a striking similarity to the mannerisms and idiosyncrasies of speech. Kraepelin has made a number of interesting studies to determine the essential characteristics of the writing of these patients. By means of a special apparatus (Schriftwage) the force and the duration of the muscular movements were graphically recorded and measured, and it was found that the rapidity with which the penstrokes were made and the amount of pressure expended in their execution during this stage were exaggerated. Even in mild cases the contrasts that exist in the character of the writing during the periods of depression and excitement are striking.

The *facial expression* during the period of excitement corresponds with the prevailing emotional tone, and by rapid and exaggerated changes often reveals the affective instability. Occasionally there seems to be an asymmetrical play of the facial muscles. The action of the muscles of speech and deglutition is impaired only in the severer forms of the disease.

Sensations.—Except in mild cases it is extremely difficult to make a careful examination of the sensations. As a rule, however, no marked disturbances in the functions of the peripheral nerves are found. As the excitement increases the attention of the patient lapses more and more, at times being riveted upon certain portions of his own field of consciousness. If the peripheral sensation is tested at such times the observer may be led to believe that touch or pain sensation is greatly impaired, inasmuch as there is no apparent response to stimuli, whereas, as a matter of fact, this condition depends purely upon the psychical state of the individual. The minute the patient's attention is directed to that portion of the body in which sensation is being tested it will become apparent that the slightest touch or pin prick is at once apprehended. Not infrequently in the early stages the patients are hyperæsthetic for different forms of peripheral stimulation. Vague hallucinations of the various sensations are not uncommon; particularly the elementary forms such as indefinite sounds, lights, etc. Well-defined persistent hallucinations do not occur in the majority of cases. Those that are met with, as a rule, vary greatly in form and change with remarkable rapidity. On account of the marked fluctuations in the attention and the excited condition of the patient illusions are even more frequent than definite hallucinations. The voices of patients or attendants are mistaken for those of intimate friends. Sounds heard in the wards are immediately associated with scenes directly connected with the patient's own personality or environment at home. Psychic hallucinations are not frequently observed. Occasionally, however, patients affirm that they are subject to visions which, as a rule, are associated with motion and only temporarily invade the field of consciousness. The objectivity as well as the time and spatial relations of these fallacious sense perceptions may be very indefinite.

The associative functions of the brain are generally more or less seriously disorganized. In the milder cases this defect does not at once become apparent. The patient's power of

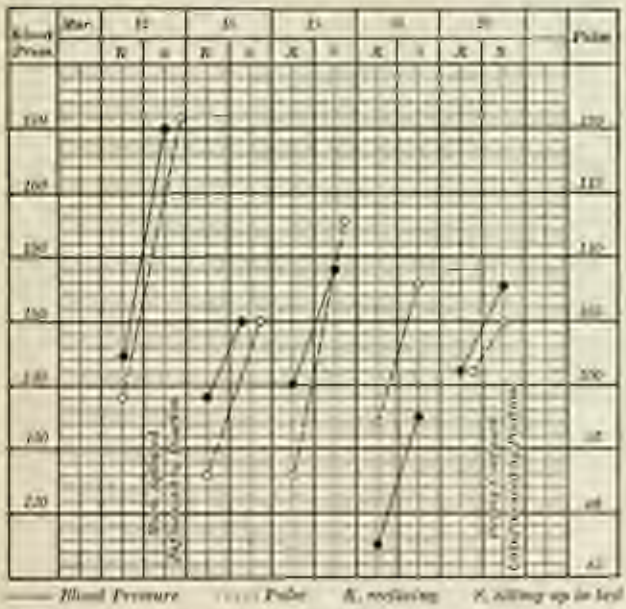
orientation may be well preserved, the disturbances in consciousness becoming marked only when the symptoms have reached a certain degree of intensity and the motor restlessness and flight of ideas have become important factors. The first change in the psychic process is the absence of normal inhibition and the consequent tendency towards the overvaluation of the minor processes in associative thought. There is a temporary abolition, as it were, of the selective and critical faculties due primarily to the absence of inhibition. Every idea that flashes into the patient's mind instantly becomes of equal importance with the one that has immediately preceded it. It is not improbable that in cases of maniacal excitement two essentially different factors, (1) a loosening of the associative mechanism and (2) a psycho-sensorial super-production, are concerned in the symptomatology. As has frequently been suggested, the clinical picture is composite and may be considered to be caused by incident stimuli with exaggerated reactions as well as by the effects of certain paralyzing agents. The relationship that exists between these two factors is best expressed in the law of psychic antagonism enunciated by Friedmann, who affirms that no psychic function is increased without impairment of others. The power of directing the attention is seriously impaired. At times, however, there may be what might be termed a semi-tetanization, the patient concentrating for an instant all his faculties upon certain objects. It is this phenomenon which has led some observers to believe that there is an actual increase in the power to focus the attention (hyperprosexia). The impairment of the critical faculties is marked in nearly all cases of maniacal excitement. The incident stimuli seem to spread in all directions and the result may be a temporary but complete transformation in an individual, so that he becomes unusually vivacious, humorous, sprightly, witty, and displays what to the casual observer appears to be an intellectual super-productiveness. During the stages of greatest excitement the patients become oblivious to the environment in which they belong and become utterly unconscious of their own physical as well as their intellectual

limitations. They affirm that they are as strong as Hercules, as rich as Croesus; the poorly dressed and poverty-stricken woman becomes a queen, etc. These insane ideas vary often from those characterized by a moderate degree of complacency and exaltation to the wildest exaggerations and extravagances. Inconstancy and capriciousness are eminently characteristic of the mental state of the maniacal patient. The systematization of the insane ideas, if it exists at all, is apt to be merely transitory.

The power to pick up and retain new impressions is diminished in proportion to the increase in the amount of energy expended in the focussing of the attention. In the earlier stages or in the milder cases the patients not infrequently retain only those impressions of their surroundings or of current events that can be taken in at a glance. The more complicated memories are seriously impaired.

Anomalies of the Emotions.—The anomalies of emotion are frequent and varied in character. In nearly all cases during the earlier stages a marked feeling of exaltation is present. The patients are pleased, self-complacent, and in the best of humors. Unquestionably, changes in the organic sensations, such as absence of the ordinary sense of fatigue, may in a measure be responsible for this mental attitude. As the maniacal stage advances this exaltation increases rapidly. The individual becomes vivacious, elated, hilarious, is thrown into transports of delight or ecstasy; later he is boastful, gives vent to the wildest statements, and becomes a mere blusterer. The correlative emotional expressions are all exaggerated. The patient laughs loudly and long on the slightest provocation, throwing his head back, opening his mouth wide, and giving vent to his feelings in a preposterous manner. In some cases, instead of the feeling of exaltation, excessive irritation is noted and the individual becomes domineering and subject to violent outbursts of temper. The slightest interference with what is his will may result in an emotional storm of great intensity, which, however, often ends as abruptly as it has begun. On the other hand, some patients become most affectionate. They

claim every one as their intimate friend. Accompanying these emotional changes, not infrequently there is marked sexual excitement. This may be limited to a mere expression of satisfaction at being in the presence of the opposite sex, or erotic impulses may lead to sexual perversion—masturbation, excessive intercourse, attempts at rape, etc. During this period men as well as women may become vulgar, obscene, lose all sense of decency, and exhibit an inordinate fondness to converse on topics relating to the question of the sexes and marriage. The development of these symptoms in many instances, if the patients are not under restraint, gives rise to complications of medico-legal importance.



—— *Blood Pressure* ····· *Pulse* *R, reclining* *S, sitting up in bed*

Case of Manic-Depressive Insanity. Depression with anxiety. To illustrate differences in lability of pulse and in blood-pressure in the sitting and reclining postures respectively. Variations are greater than normal.

The *physical symptoms* of mania are those common to most of the forms of mental excitement accompanied with motor restlessness. The pulse, as a rule, is accelerated, the rapidity rising as the motor restlessness increases. The blood-

pressure in most of the uncomplicated cases is low during the period of excitement. Slight causes—a person entering the room, a sudden noise, or anything which attracts the attention—frequently produces wide variations in pulse and in blood-pressure. The accompanying chart graphically shows how in one of our cases a change of posture produced a wide variation when the patient was in an agitated condition and a less wide variation when the patient was somewhat stuporous.

Other observations tend to confirm those of Dawson,[5] who affirms that "the characteristic feature of the general circulation in excitement and probably in exaltation is low arterial tension which helps to maintain, if it does not cause, the mental state." But "here again there is no direct evidence of the state of the cerebral circulation."

Pilez has called attention to the marked correspondence which exists between the pressure, frequency, and sphygmographic tracings of the pulse in cases during the stage of excitement as contrasted with the results of similar observations made during the period of depression. From this it must not be inferred that there are pulse-curves characteristic of the manic and of the melancholic periods. The personal variation, however, must be considered in each individual case. The examination of the blood during the maniacal stage reveals no characteristic changes. Fisher,[7] after a careful examination of the blood in a number of cases, has come to the following conclusions: (1) there is no pathognomonic blood change during the maniacal phase; (2) anæmia is not a causative nor a constant factor; (3) the hæmoglobin and red cells are frequently increased in number during the attack, and (4) leucocytosis is almost a constant accompaniment and apparently a result of psychomotor activity. The reported variations in its alkalinity have not been confirmed.[8] The breathing during the

[5] The Rôle of the Blood Supply in Mental Pleasure and Pain. Dublin Journal of Medical Science, February, 1900.

[7] Fisher, Jessie Weston. The Blood in Manic-depressive Insanity. Am. Journ. Insan., 1903, vol. lix, No. 4.

[8] Lambranzi: Rivista di patologia nervos. e mentale, 1899, fasc. vii.

PLATE VII

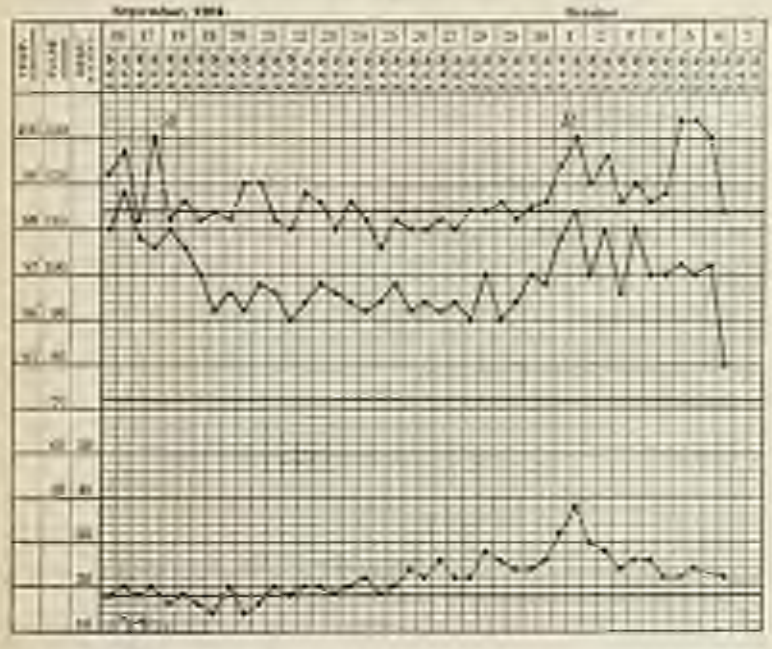
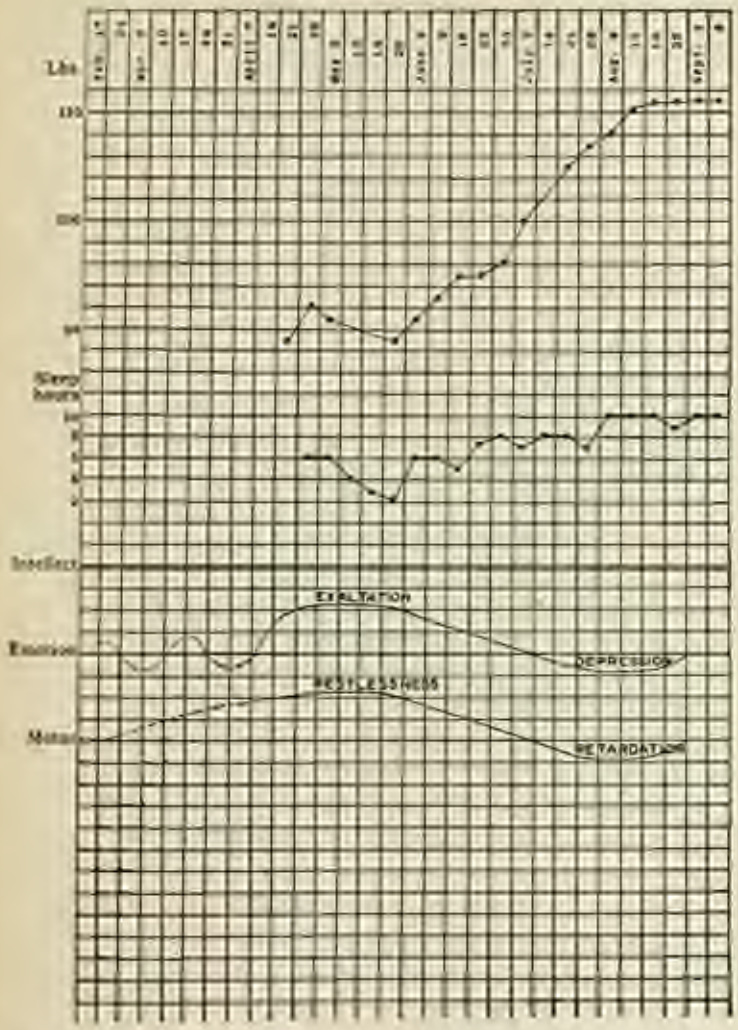


Chart showing temperature, pulse, and respiration curves in a case of manic-depressive insanity. On admission the patient was excited, but soon became more quiet (A). After two weeks the excitement returned (B) and became more marked than it had been at the time of admission.



[1]. Case of manic-depressive insanity showing loss and gain of weight, increase in average hours of sleep, and indicating schematically changes in emotional and motor spheres. Incidentally, prior to attack patient was slightly deliroid. Dotted lines indicate condition before admission to hospital.

periods of greatest excitement is, as a rule, somewhat shallower and increased in rapidity as compared with the normal. Some observers have reported a rise in the temperature varying from 0.5° to 2° C. The bodily weight nearly always falls during



(II.) Case of manic-depressive insanity of short duration. Chart shows loss and gain of weight, increase in average hours of sleep, and indicates schematically the changes in intellectual, emotional, and motor spheres.

the period of excitement. (Charts.) Sometimes there is a rapid drop of several pounds. At other times the loss is more gradual and is in a measure proportional to the motor excitement.

The changes in the chemical constituents of the urine are not characteristic. During the height of the attack peptone

and albumin are not infrequently present, but these disappear, as a rule, as the excitement diminishes.

Symptoms indicating the existence of destructive lesions in the central nervous system are not infrequently reported. The instances in which hemiplegias occur are due to complicating focal lesions. The same is true of the facial paralyses as well as those implicating the ocular muscles. Occasionally convulsions take place during the period of excitement. When these are noted they are extremely suggestive of the existence of epilepsy. The various symptoms arising from over-stimulation or paralysis of the sympathetic are not infrequent during the attacks. In some instances it has been possible to confirm the observations of Schott, Ball, Regis, von Wagner, Mendel, and others regarding the occurrence during the period of excitement of pupillary differences. As a rule, the pupils are widely dilated and react to light. The superficial and deep reflexes are generally increased. The occurrence of ankle-clonus during the period of greatest excitement has occasionally been noted.

Disturbances in the gastro-intestinal tract, giving rise to anorexia, nausea, vomiting, and constipation, are nearly always present. The disorders are not improbably due in a majority of the cases to functional disturbances involving the internal secretions. In many cases there is a marked salivation and diminished sweat secretion. In some cases, if given an opportunity, patients bolt large quantities of food,—bulimia,—but frequently, on account of the motor restlessness, it is extremely difficult to feed them.

II. The State of Depression.—By some this condition has been regarded as the antithesis of the period of maniacal excitement. This is true, however, only in a very limited sense. In nearly all cases of depression certain symptoms occur which are also to be met with during the cycle of greatest mental perturbation. Not only is this a fact, but the gradations which exist between marked manic excitement, on the one hand, and deep depression, upon the other, are so gradual that it is seldom justifiable to consider the two states as fundamentally

antithetical. As motor restlessness is a prominent symptom of mania, so the psychomotor retardation may be equally characteristic of the state of depression.

The motor anomalies occurring during the period of depression are referred to by Wernicke as the expression of an intra-psychic akinesis. The appearance of the patient suggests a general diminution in the ideomotor activities of the cerebral cortex. All movements are slow and made with difficulty. As has been pointed out, the reactive are less interfered with than the so-called initiative movements. This is particularly true for speech. The reply to a simple question is given only after the lapse of a considerable interval of time, the tone and pitch of the voice are lowered, the intensity of all movements of the lips and tongue is greatly diminished. The same limitations are noticeable in many cases in the facial innervation. The intensity of all voluntary movements, not only of the face, but of the extremities and trunk, is generally impaired. Associated with the delay in the muscular reaction and decrease of the intensity of movements in many cases there is an accompanying emotional depression as well as a retardation in the processes concerned in thought. These symptoms vary greatly. In the mild cases psychomotor retardation and the psychical feeling of depression are sometimes made out only with difficulty. The antecedent motor restlessness and slight exaltation may serve to bring these symptoms into sharp contrast and thus facilitate their recognition as abnormalities, and not the mere expression of a personal idiosyncrasy.

In other cases the retardation of thought and action is well marked, and associated with this there is considerable emotional depression. The emotional instability so characteristic of the maniacal state, as a rule, disappears during the period of depression, and is replaced by an unbroken and stable affective tone. On account of the retardation that exists, the examiner may be led to believe that the primary sensations are not intact, but the difficulty of testing patients in this condition is so great that, as a rule, definite conclusions cannot be drawn. The reaction time during the period of depression

is greatly lengthened. The pulse generally becomes slower. The blood-pressure, which was low during the period of manic excitement, other things being equal, rises during the depression. The changes in the handwriting, as would be expected from the retardation of all voluntary movements, are characteristic. Reference has already been made to this point in discussing the symptoms of the manic excitement. In some cases the retardation of thought and action is less marked than the emotional depression. This will be discussed in considering the mixed forms. In the milder cases time and spatial orientation are well preserved, but in the severer types there may be marked confusion. Sometimes the patients are conscious of the subjective difficulty in the associative processes. They not infrequently affirm that they are unable to speak or to think; they appreciate the difficulties, but are unable to assign any definite reason for them. The somatopsychic consciousness is markedly affected. As a rule, it may be said that the patients are simply depressed mentally, while in some cases there is superadded a feeling of vague apprehension, which later develops into marked anxiety. The emotional depression deepens as the patients become more or less conscious of their inability to think or act. Everything is difficult for them. This emotional state may be intensified by the appearance in consciousness of anomalous sensations, anxiety, fear of impending death, and various painful states which in cases of extreme rarity are peripherally conditioned, but, as a rule, are merely symptoms of psychic pain. Imperative conceptions sometimes dominate the field of consciousness, and these may give rise to more complicated phenomena, especially if they persist for any length of time. In some instances the cropping up of imperative ideas may be the basis for a systematized micromania. In the milder cases this may be absent and merely a feeling of insufficiency exists. The patients affirm that they once were able to do their work, but the increased difficulty in thinking and in the execution of voluntary acts incapacitates them. In the extreme cases a marked akinesis may result.

Not infrequently *insane ideas* develop. In some instances, particularly in the uncomplicated forms, they represent an attempt on the part of the patient to interpret the change in the organic sensations. Such a condition may seriously disturb the individual's ideas of his own personality or may alter his apparent relationships to his environment. On the former basis we have the development of the ideas of self-insufficiency and personal unworthiness or the commission of unpardonable sins for which there is an immediate and awful retribution. Thus a patient will frequently assume that he is the most wicked person God ever created, and the like. Various hypochondriacal symptoms may also be superadded. In the latter instances the dissociation in the consciousness of the external world culminates in ideas of persecution, etc. The development of insane ideas out of obsessional impulses and hallucinations is considered by some clinicians as indicating the occurrence of complications. Heller[9] has affirmed that hallucinations are comparatively infrequent during the course of melancholia. According to Ziehen in depression they only occur in one out of ten cases. Schott,[10] who examined 250 patients suffering from melancholia with this special point in view, reported the occurrence of hallucinations in only 28.8 per cent., hypochondriacal ideas in 27.6, and imperative conceptions in 8 per cent. of the cases.

The inhibition of the psychical faculties may become so marked that the patients pass into a stuporous condition. To all outward appearances they seem to lead a merely vegetative existence. External stimuli fail to produce any evident reaction; or, at most, a simple reflex movement follows. There is no elaboration or working up of incident stimuli. The patients, as a rule, remain in bed. They do not refuse to take food, but they have to be fed. Occasionally a slight swallowing movement is made; at other times the fluid runs

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[9] Heller, E.: Die Wahnideen der Melancholiker. Inaug. Diss. Marburg, 1896.

[10] Beitrag zur Lehre von der Melancholie.

from the month. After the patient has recovered, generally the memory for that period during which the psychic inhibition and retardation were at their maximum is a mere blank; at other times there are islands in memory—some events being plainly recollected, while others are completely forgotten.

The *physical symptoms* in this stage, with the exception of those already noted, do not differ essentially nor specifically from those recorded during the period of the motor excitement.

Clinical Course.—The course of the disease is characterized by the appearance of symptoms that give to the clinical picture now the signs of maniacal exaltation or again that of mental depression with their correlative physical attributes. The syndrome of exaltation and motor restlessness may alternate with that of depression and psychomotor retardation. In other cases the dominant emotional tone and concomitant physical state ushering in the symptoms may persist with slight modification until the end of the attack, a temporary suggestion of the so-called antithetical state only occasionally coming into view. Not infrequently there is an intermixture of symptoms so that the emotional tone characteristic of one state is attended by the physical signs generally associated with the other condition. The tendency of the attacks to recur at longer or shorter intervals is another distinctive feature of the disease. The lucid intervals, which are essentially characteristic, are not marked by the development of other forms of mental aberration, such as paranoic states or dementing processes.

This group includes simple and recurrent manias and melancholias as well as the various forms of circular insanity and the so-called recurrent paranoias that do not exhibit symptoms of a specific mental reduction in the lucid intervals. The discussion of the features characteristic of the different clinical groups will be taken up under the following heads:

(1) *States in which the dominant symptoms are exhilaration and motor restlessness.* This form may rightly be said to include all cases of the typical or classical type of mania as well as the milder forms, such as hypomania, mania without

delirium, some of the delirious manias, as well as some forms in which the motor restlessness and exaltation show a tendency to run a protracted course and the insane ideas become more or less systematized. The cases which were formerly described as instances of pure mania are very infrequent.[11] They include only from one to three per cent. of all the cases. As a rule, this type is met with more often in the earlier than in the later years of life, although some clinicians affirm that it not infrequently appears in young children in the atypical form. Many, if not all, of the so-called cases of simple mania, if studied with sufficient care, show at some time during their course the symptoms which are commonly associated with the period of depression,—viz., the psychomotor retardation, the limitation and delay in the functions of association, mental depression, etc.

These symptoms may be only transitory in character and easily escape the notice of the physician. As a rule, the disease begins with an initial stage of longer or shorter duration in which the patient becomes nervous, irritable, unduly responsive to all forms of stimuli. There may be marked sleeplessness of which the patient does not, as a rule, complain. The motor excitement may be general or in some instances limited to the speech centres. If stimulated, the patient becomes voluble, and the function of the inhibitory centres is apparently temporarily abolished. It is not infrequently the case that this so-called prodromal period represents a depressed stage. If such a state exists, the patient speaks little, becomes seclusive; or, if he does speak, he may be thought to be hypochondriacal on account of the numerous complaints expressed concerning his bodily state. Gastro-intestinal disturbances are not infrequent. Headaches occur, and in place of actual depression there may be merely an indefinite feeling of insufficiency or marked anxiety. This initial stage, which in some instances is a true prodromal

[11] Hitzeblen: Allg. Ztschr. f. Psych., Bd. liv. Mayser: Neurol. Centralbl., 1898. Nr. 11.

period, merely ushering in the maniacal outbreak, in other instances is more prolonged, marking a true period of depression and varying in duration from a few days to several weeks. The second stage is one in which the maniacal symptoms of motor restlessness, exaltation, emotional anxiety, etc., attain their maximum intensity. In these cases the diagnosis is not difficult, the patients presenting most, if not all, of the symptoms which have already been described under the head of the maniacal phase. In the mania gravis, the motor agitation is excessive. The emotional storms that come and go are intense in their severity. Marked exaltation may alternate with or be replaced by periods of intense anger. The flight of ideas may become masked by a complete incoherence and dissociation. In the type of cases described by Weygandt[12] as unproductive mania there is marked motor restlessness, with considerable impairment in the associative processes, and a marked deficiency of expression amounting at times to mutism. In some of the severer forms of the disease disorientation and general mental confusion may persist for days or even weeks. Death may occur during this period, if the patient is not carefully guarded from self-inflicted injury, or the disease is complicated by pneumonia, nephritis, etc. The terminal stage, as a rule, marks a gradual transition from the second period of the disease. The symptoms, one by one, become less and less marked, and the patient finally enters the stage of convalescence. The symptoms of mania not infrequently persist for several months or even a year. Death occurs in about 5 per cent. of the cases. The symptoms characteristic of depression may not become apparent until the stage of convalescence is reached. The mild cases—mania mitissima or hypomania—only occasionally come under treatment in hospitals, and frequently present considerable difficulty in the establishment of a diagnosis. The following history is typical of these milder forms of the disease:

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[12] Ueber die Mischzustände des manisch-depress. Irreseins. München, 1899.

Male; single; aged 23. Described as young man of high moral character; of regular habits, studious and industrious. Never had any serious illness. About two months before admission to the hospital there was a change noticed in the patient's disposition. There was slight exaltation and excitement. "he became unduly elated at his business prospects." Some garrulity was noted. The language was characterized by slight extravagances in expression. Later he became slightly suspicious of some of his friends, whom he accused of having maligned his character. Shortly after this he acquired a passionate desire for dancing; showed no signs of violence, and was apparently rational, although he always seemed excited and acted as if he were in a hurry. One day prior to admission to the hospital he became confused and wandered aimlessly about for several hours. Was reckless in the expenditure of his money. Went into a strange store and told the clerks that he was prepared to take charge of the business. Had to be forcibly ejected. During the month that the patient was under observation in the hospital he improved rapidly. The motor restlessness became less marked, the confusion in speech and garrulity disappeared. His weight, which at first had dropped, increased, and the patient was finally discharged recovered.

During the period that the patient was in the hospital a diagnosis of manic-depressive insanity was made. Motor restlessness, flight of ideas, and exaltation were the dominant symptoms. Since the patient's discharge he has had two mild attacks of mental depression.

When the symptoms of depression occur in the terminal stage they are not infrequently looked upon as mere reactive phases of the acute stage. Many cases of the aggravated form of neurasthenia in which there is a well-marked periodicity present are unquestionably to be classed among these mild cases of manic-depressive insanity.[1] During the period of excitement the patients become fidgety, eccentric, somewhat exhilarated, always in a flurry, slightly officious, meddlesome, showing a desire to talk on the slightest provocation. Associated with these mental disturbances, the bodily weight drops slightly and the rapidity of the pulse may be somewhat increased. The emotional instability is often pronounced.

In cases typified by the history given, the garrulity of the patients is frequently the dominant feature. The value of this

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[1] Hecker. Die Cyclothymia eine circuläre Gemüthserkrankung. Ztschr. f. Praktische Aerzte, 1869, No. 1, p. 6. Die milder verlaufenden Arten d. circulären Irreseins. 22 Wanderversammlung der südwestdeutschen Irrenärzte zu Baden, 2 Sitzung 22, 23 Mai, 1869.

symptom necessarily depends upon the knowledge the observer has of the character of the patient prior to the attack. There may be no gross dissociation of thought, so that the patients, on casual observation, may not be considered incapacitated for work. The diagnosis of mild manic excitement in a great measure depends upon the motor restlessness. The flight of ideas is not necessarily characterized by incoherence, even if a tendency is shown to translate ideas into some form of action. While the excitement persists, the interests of the patients seem to enlarge. Little escapes their attention. They plan new enterprises, enter with zest into new undertakings. The judgment, as a rule, is not markedly impaired. The conduct of the patient, in a measure the result of impulses which quickly come and go, is accompanied by considerable emotional instability. There are not, however, the same irrelevancy and disconnectedness which characterize the conduct of patients afflicted with dementia præcox. The emotional instability of the patient suffering from manic-depressive insanity, as a rule, is in response to external stimuli and may have the appearance of being purposeful. The emotional changes are rapid, fluctuating, and the varying tones or shades of feeling are strangely antithetical. Not infrequently the patients themselves notice this anomalous state; thoughts are said to gallop through their heads with unusual rapidity; they complain that they have no rest, that they cannot free their minds from the various schemes which continually present themselves. Not infrequently digestive disturbances occur during these attacks of mild maniacal excitement, and in some cases there is a marked increase in the rapidity of the pulse. The patients often come under observation when it is impossible to determine the existence of maniacal symptoms without a most careful study not only of one bout of several attacks. These cases were referred to formerly by the French observers as instances of *folie raisonnante*. After carefully studying the symptoms, it may be possible to determine that the increased intellectual activity of the patient is apparent rather than real. This is shown in the rapidity with which patients pass from one

subject to another: the fact being that they are the most impressed by the ideas that at a given moment occupy the focus of their attention, never suspending judgment until they are able to form an accurate comparative estimate and thus to determine the best course of action. Frequently the conversation, if carefully noted, brings to light peculiarities which are, in a measure, distinctive, such as preponderance of alliterations, etc. The absence of tact and the dulling of the more delicate sensibilities are not infrequently striking. During this period of mild excitement symptoms of fatigue are generally absent; the patients sleep but little; the appetite, as a rule, is somewhat diminished, though at times the food may be bolted in fairly large quantities.

Between these cases and the severest forms of mania all grades are found. In some instances insane ideas predominate. The differential diagnosis between these cases and those of general paresis in its early stages is frequently difficult, especially when occurring in comparatively young people.

The maniacal stage in some cases is characterized by an absence of general motor excitement, the symptoms noted being more purely psychical. In women the periods of greatest excitement may coincide with the menstrual epochs. The so-called periodic psychopathia sexualis is in many instances a mild recurrent type. The mere periodicity of the recurrence is not in any sense a point of great diagnostic importance. The forensic importance of these cases is referred to under the chapter dealing with the questions of legal responsibility. Occasionally we meet with cases in which there is marked motor restlessness as well as the compulsion to act, but the limitation and retardation of the associative faculties are prominent features in the symptomatology. These patients represent the examples of mania with limited and delayed thought—the unproductive mania. The emotional state may be one of evident pleasure or exaltation. This group of symptoms in some cases may take the place of the period of true maniacal excitement. In others it merely follows it, representing the stage of subsidence of the acute symptoms (Stadium dementiæ or moriæ).

(2) *States in which the dominant symptoms are psychomotor inhibition, mental depression, and retardation in the association of ideas.*—The milder cases, hypo-melancholias, are not infrequently diagnosed as neurasthenia. As a rule, it is impossible to say when the prodromal period begins. The symptoms are not specific. For a long time the patient may be considered to be merely a hypochondriac, and it is only when the subsequent stage occurs in which the antecedent psychic inhibition is contrasted with the motor restlessness and exaltation that a diagnosis can be made. In some cases the prodromal period is one in which the dominant features are slight motor restlessness and a group of physical symptoms which suggest the very mildest form of maniacal excitement.

Anæsthesias, more frequently parasthesias, occur. As the period of depression develops, the psychomotor retardation becomes evident, and the patient passes into a stuporous state in which the retardation is excessive. At times the patient may become subject to hallucinations. In the milder cases, as a rule, these are evanescent in character.

The occurrence of cases of pure mental depression without any of the accompanying symptoms of excitement are exceedingly rare, if, indeed, they ever occur. The following case abstract shows that, even although symptoms of excitement may be slight, they are never completely absent:

Patient, female, single, aged 39. Two years prior to admission she had a nervous breakdown due to worry. Six months before coming to hospital there was a period of improvement followed by nervousness and insomnia. Religious fears and anxiety developed. On admission to the hospital she was very nervous, slightly confused; there was loss of appetite and insomnia. Self-accusation was noted. The patient affirmed that she was a very wicked woman and that she expected Almighty God to strike her dead. The facial expression was one of depression. The association of ideas was slow. The tone of voice was low and monotonous. There was considerable motor retardation. She retained insight into her own condition. The power of fixation and concentration was poor. Suspiciousness and fear were at times marked. She was decidedly introspective, and explained the evolution of her insane ideas as follows:

(1) That she was an unconscious hypocrite, doing evil without knowing it.

(2) That consciousness of innate evil had led her to believe that she was an exceptional person, that no one ever had been created so bad as herself.

(3) That as a consequence of this criminal wickedness she had revelations of the devil, visual and auditory.

(4) That she recognized that she was a lost soul; that she was harrowed by the awfulness of her prospect in the presence of the evil spirit, as well as the ideas of future torment.

(5) She affirmed that all these were spiritual phenomena (auditory and visual hallucinations).

Weight on admission, February 15, 1901, 134 pounds. June 1, 125 pounds. In the early part of February motor restlessness was very marked. It gradually decreased until April, when it passed away. All the symptoms subsided, and the patient was discharged November 23 greatly improved; weight 133 pounds.

The period of excitement may occur either in the prodromal period or in the period of convalescence, and is not infrequently in the latter stage referred to merely as a reactive hyperæmia. The duration of the depression varies. Instances have been reported in which it recurred every few days with great regularity. Clinically, the majority of cases may be grouped into those with psychomotor retardation and depression accompanied by more or less stupor. Some of the patients who show signs of melancholia with motor restlessness (melancholia agitata) belong in this group, while other cases are instances of dementia præcox or the involutional melancholias.

(3) *States in which the symptoms of excitement and of depression occur with some degree of regularity and with an inclination to alternate.*[11] The charts X and Y, taken from Weygandt, give a graphic indication of the character and sequence of the recurrences in the cases commonly referred to as instances of circular insanity. The curve below the horizontal line indicates depression, and the one above the period of excitement. Weygandt affirms that in 150 cases with marked recurrences 20 per cent. had attacks in which the mixed character of the symptoms predominated. In 33 per cent. this was merely transitory, and was most marked during the tran-

[11] Dewey: A Case of Circular Insanity studied from Clinical Differential and Forensic Stand-points. Journ. Amer. Med. Assoc., April 30, May 7, 1904.

sition stages. Marked deviations from this type of the disease were noted in 14 per cent. of the cases.

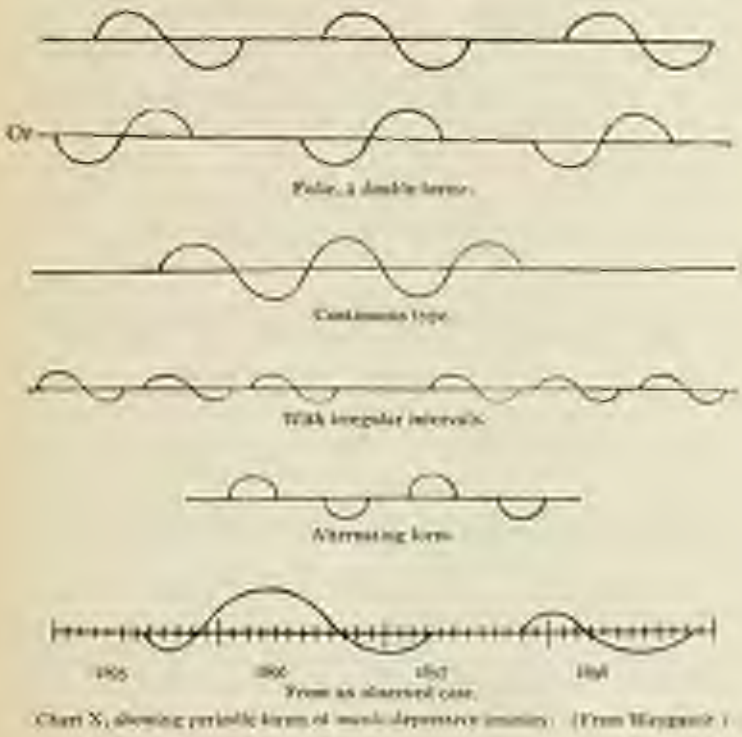


Chart X, showing variable forms of manic-depressive insanity. (From Weygandt.)

(4) *States in which the affective fluctuations become less marked and the patient shows a tendency to develop a more or less immobile systematized paranoiac condition.*[13]—The diagnosis in these cases can frequently be made only with considerable difficulty and after much time has elapsed. This category includes some, if not all, of the so-called recurrent paranoias in which during the lucid intervals there is no

[13] Weygandt: Ueber die Mischzustände des manisch-depressiven Irreseins. München, 1899. Sollier: Sur une forme circulaire de la neurasthénie. Revue de Médecine, 1893, p. 1909. Pferdehirt: Ueber intensive Wahnideen im manisch-depressiven Irresein. Centralbl. f. Nervenheilk. u. Psych., 1904, März, Nr. 170.

specific reduction. In the United States alienists are particularly indebted to August Hoch for his study of this type of the disease. These cases may be divided into two categories: (a) those which develop out of one of the conditions de-

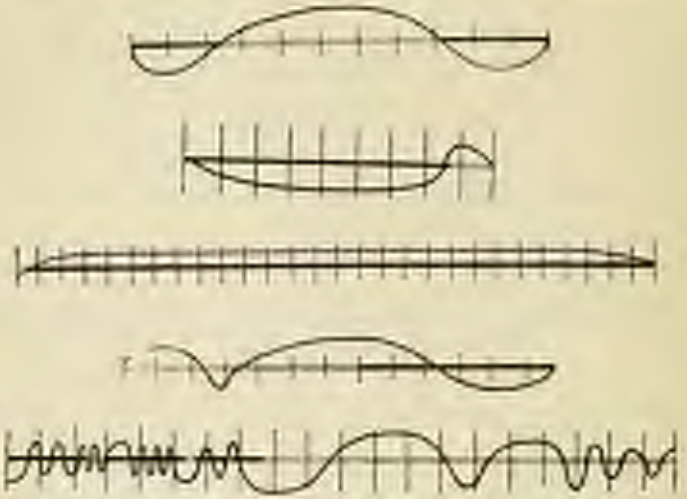


Chart V, showing course lectures of manic-depressive insanity.

In the above diagrams the black horizontal line indicates the period of psychomotor retardation, the open horizontal line the period of psychomotor irritability or excitability. The curve below the line indicates emotional depression, and above the line indicates emotional excitement. For example:  indicates psychomotor retardation and emotional depression.  indicates psychomotor irritability and emotional excitement. The short vertical lines divide the curves into weekly periods. (From Weygandt.)

scribed as depressed, excited, or mixed states, and (b) rare instances in which the paranoiac condition is marked at the outbreak of the alienation.

Etiology.—Nothing is known in regard to the dominant causes which determine the character of the attacks. There is no satisfactory hypothesis that attempts to explain the reason why motor restlessness and exaltation are the dominant features in one case and in another psychomotor retardation and

depression. Lambranzi [16] examined, between 1895 and 1901, 173 cases in which the diagnosis of mania had been made. Of these individuals 99 were women and 74 men; 48 had already been under treatment; 37 had a recurrence of the attack during the period of observation; 15 had several attacks, and their cases were diagnosed as periodic psychoses; 5 had recurrent attacks of melancholia, and were regarded as suffering from circular insanity. Of the remainder, after the elimination of the doubtful cases in which alcoholism, epilepsy, or hysteria played an important rôle in the pathogenesis, there were 12 which gave the clinical picture of mania. In 157 patients in whom the diagnosis of melancholia was made 27 had been under treatment for a similar trouble; 34 had single recurrences; 5 a periodic, and 4 a typical circular insanity. The remaining 19 cases had symptoms of mental depression. More recently Soukanoff and Gannouchkine [17] have examined all patients suffering from mania admitted to the Psychiatrical Clinic in the University of Moscow, carefully excluding all cases in which there were any symptoms of depression as well as all forms of the circular insanity. From these observations they came to the conclusion that every acute psychosis, whether it be amentia, melancholia, mania, etc., always has a tendency to recur at shorter or longer intervals. Out of 4434 patients admitted to the clinic between November, 1887, and September, 1902, only 40 cases, 16 in men and 24 in women, were diagnosed as mania. It was found after a further analysis of these statistics that the symptoms of motor restlessness and exaltation were more apt to dominate the clinical picture in women than in men in the proportion of 2 to 1. Although the number of maniacal patients was less than 1 to 100, the percentage of cases of mental depression was almost seven times as great. Although the pure maniacal symptoms according

[16] Lambranzi, Ruggiero: Contributo allo studio della "forma maniaco-depressiva" e della melancolia da involuzione (Giorn. de psichiat. clin., xxx, No. 2, 3.

[17] Étude sur la manie. Archives de Neurologie, t. xv, Mai, 1903, No. 89, p. 401.

to these statistics are comparatively rare in both men and women, the mental depression is one of the most frequent psychical disturbances in women.

According to Kirn and Pick,[18] in the so-called circular form of the disease the character of the first attack seldom corresponds with that of the later recurrences. Generally the patient has an attack of mania followed by a period in which motor restlessness and exaltation are the dominating symptoms; then a lucid interval followed by an attack of mania or melancholia. Some clinicians affirm that the circular forms always begin with an attack of melancholia. Clouston, however, maintains that the symptoms of excitement most frequently occur in the initial seizure. When the attacks of depression and excitement are associated and have reached a maximum intensity they tend to recur at frequent intervals during the rest of the patient's life.

The *prognosis* is, as a rule, bad in all forms of periodic insanity in which the individual attacks are severe and prolonged. It is somewhat more favorable where the attacks are shorter in duration and come in groups. The duration of the attacks may vary greatly from a few hours to one or two years. Cases have been reported in which the attacks lasted for six to seven years.

The mental condition of the patients during the lucid intervals varies. Cases have been recorded in which frequent attacks have occurred during the life of the patient, and in the intervals between the attacks the intelligence seemed to be unimpaired. One author mentions a patient who died at the age of 78 and who had suffered from recurrent attacks for forty-four years, and yet during the remissions had exhibited no trace of intellectual impairment. The lowering of the cortical functions, most frequently noted in these individuals during a remission, does not, as a rule, show itself

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[18] Die periodischen Psychosen. Stuttgart, 1878. Pick: Eulenburg's Realencyclopädie d. gesammten Heilkunde, III. Aufl., Bd. v, p. 765. "Circulares Irresein."

in the intellectual sphere. Generally there is a certain degree of emotional irritability, a capriciousness, marked egotism, and perhaps an impairment of the ethical sense. In some instances a chronic state develops which bears the marks either of maniacal excitement or the period of depression. The former is occasionally interspersed by periods in which the motor restlessness alternates temporarily with a brief period of psychomotor retardation. In the prolonged cases of mental depression the periods of depression alternate with those of motor restlessness. These chronic cases need to be studied more in detail. The occurrence of well-systematized insane ideas with a lessening of affective fluctuations is generally an indication that the attack will be a protracted one. It is not always possible to say from the intense character of the excitement or the mere depth of the depression that the patient will be a long time in convalescing. In all forms of this disease it is very important that a careful record should be kept of the weight of the individual. As long as this falls, either in the period of depression or excitement, a favorable prognosis cannot be given even if the mental state of the patient seems to show some improvement. As soon, however, as the weight curve begins to rise a favorable prognosis may be given, even if the mental status is apparently unchanged. An example illustrating the importance of this last point is given in the history of the following case:

The patient, a man aged 20, was admitted to the Sheppard and Enoch Pratt Hospital November 28, 1903.

Family History.—Negative for nervous and mental diseases.

Personal History.—No peculiarity in mental development. Good student. History and mathematics favorite topics of study at school. Whooping-cough and measles when a child. At the age of 13 was thrown from a wagon; was unconscious for an hour, but made a rapid recovery and no after-effects were noted. "Has been treated for kidney trouble since age of 18, and has frequently had attacks of chills and fever, during which he was often delirious." Character previous to onset of present illness has been described as at times vacillating and impulsive.

Present Illness.—Relatives noticed that he had acted queerly for about a year. At times would seem to be absent-minded and dreaming. In the spring of 1903 he suffered from loss of appetite, a general feeling of malaise

and some mental depression. These symptoms continued off and on until October, 1903, when he became restless with periods of reticence, inclusiveness, and irritability. He was easily confused and occasionally self-accusatory. A few days prior to admission to the hospital he began to talk a great deal, and "preached on everything he had seen or heard." Later became very violent, wanted to put his father and mother out of the house. This period of aggressiveness was followed by one of the depressed spells, which lasted only a few hours, when he again became excited, indulged in a great deal of profanity, and tried to whip one of his uncles. Patient was first taken to the city almshouse, and transferred from there on November 28 to the Sheppard and Enoch Pratt Hospital. On admission to the latter institution it was noted that he was apparently dazed, confused, and showed considerable motor restlessness, but towards evening this disappeared. On the following day while under examination he made no objection to being undressed, merely submitting passively without offering in any way to help. The general character of the motor reactions indicated the existence of slight psychomotor retardation. Attention easily gained, but little power of concentration. Voluntary conversation at times limited. Once or twice without any apparent reason began to cry and complain of having been cursed by some one whose name he did not give. Admitted that his memory was somewhat defective, but otherwise he was "quite bright in his mind," "although sick of trying to save people," and did not want anyone to send him to prison. On December 3 the patient was more communicative. His attention was easily gained but still lacked concentration. He would begin to describe an object or to give expression to some idea, but distractibility was very marked, and apparently he had no goal in view. Emotional tone corresponded with mental state. Weight, 113 pounds. Blood-pressure, 130. On this date, December 4, patient began to show signs of increasing motor restlessness and compulsory speech, insisting upon declaiming before patients and attendants.

December 5. Markedly depressed, with tendency to cry. Affirmed that his thoughts are audible so that other people could hear them. Even God had heard them, otherwise the patient would have been dead long ago. Remembered having been noisy during the night. Said he could not help this, as he saw some one rising from the dead. Declared that unpleasant thoughts made him cry.

December 10. Motor restlessness more marked, considerable exuberance of spirits. Danced and cut capers, tore his clothes, and was markedly impulsive. At the end of December the patient had gained four pounds in weight, but there was no improvement in the mental condition. On January 21, although there was some general motor restlessness present, the patient's emotional tone was evidently one of depression. While being examined, he showed no tendency to talk, but when asked to write gave evidence of the existence of a sensory flight of ideas. Patient's condition has gradually improved, and with the exception of the two slight drops in weight indicated on the chart there has been a steady and en-

interrupted gain. The slight loss of weight between February 5 and 12 was accompanied by a change in the mental attitude of the patient, as he was angered and depressed by what he thought was an apparent inattention and lack of sympathy exhibited in his case by a relative.



Weight chart in a case of manic-depressive insanity. At A and B the patient was more depressed than usual.

Pathogenesis.—Nothing is known regarding the immediate causes of this disease. There is no other form, however, of mental aberration in which the hereditary factor plays a more important rôle. In from 80 per cent. to 90 per cent. of the cases of manic-depressive insanity the history of insanity afflicting the ascendants is well marked. Souldhanoff and Gannouchkine,[19] as the result of their observations, affirm that women are more inclined to suffer from depression than are men (3:1), and that the hereditary factor plays a less important rôle in the former than in the latter. The disease when it once makes its appearance in a family shows a remarkable tendency to reappear in the descendants. Even when a history of definite symptoms of alienation cannot be obtained as having occurred in the progenitors, "strong family idiosyncrasies" are nearly always noted. As a rule, the majority of patients

[19] Étude sur la mélancholie. Annales médico-psychologiques, Sept.-Oct., 1903.

who suffer from this disease are delicate. From their earliest years they have exhibited eccentricities of character referable to an unstable nervous system—hypochondriasis, "attacks of the blues," sexual irregularities, more or less egotism, a tendency to lie, etc., being some of the more common defects. The importance of trauma, the acute infectious diseases, meningitis, encephalitis, parturition, excessive and prolonged physical and mental strain have all been emphasized as etiological factors.

Sufficient has already been said to show that the *differential diagnosis* in these cases is frequently beset with many difficulties. This is particularly true in the excited stage. The motor restlessness and exaltation in this condition, as a rule, differ essentially from those observed in cases of dementia præcox. In manic-depressive insanity the patient is more responsive to external stimuli, he is easily deflected and may to a certain extent be led. Each new impression as it is stamped upon the cortex gives birth to an idea expressed either in speech or action that is the result of the incident stimulus. The flight of ideas may be distinguished from a mere hotch-potch, inasmuch as the latter by its extreme silliness, irrelevancy, numerous repetitions, and reiterations, is more suggestive of mere automatism. The actions of the patients during the stage of maniacal excitement are, as a rule, conditioned by the effect of extra-organic stimuli. In the earliest stages of the excitement the diagnosis is frequently extremely difficult, as it depends largely upon the intimate knowledge possessed by the observer of the patient's idiosyncrasies. The maniacal excitement may be mistaken for the earliest toxic symptoms produced by cocain, alcohol, and other drugs which give rise to motor restlessness and a limited flight of ideas. In the pronounced cases the mental exhilaration of the patient may simulate the incipient euphoria of general paresis, but in the latter instance the ideas are apt to be more insistent and the self-complacency of the patient is more exaggerated. The recognition of the depression in the early stages or in the milder forms of the disease is even more difficult than that of manic excitement. Not infrequently it is extremely difficult to determine whether an actual psycho-

motor retardation exists. The diagnosis is rendered even more difficult if, as is often the case, depression is associated with motor excitement. The subjective sense of insufficiency of which the patients may complain is an important sign during the period of depression. Individuals so afflicted may regret that they are unable to work, or to exert themselves in any way, and may complain bitterly of the retardation and inhibition of their mental processes.

The involutional melancholias are, as a rule, to be distinguished by the greater tendency shown for the development of the systematized delusions and the absence of marked psychomotor retardation and delay in all forms of thought. In these cases the insane ideas are more stable. The outbursts of anxiety which accompany the pre-senile or senile depressions are important factors in the differential diagnosis of these disorders. Dementia præcox is to be distinguished from manic-depressive insanity by the occurrence of mannerisms, motor symptoms, verbigeration, isolated impulsive acts, etc. The milder cases described as cyclothemia are not infrequently difficult to differentiate from neurasthenic states in which not infrequently there is a mixed state of mild excitement with subsequent depression. Occasionally, it is impossible to decide for some time whether a case is one of epileptic mania or of manic-depressive insanity. In the former instance the outbreaks are apt to be more violent, the patient is much more dangerous, and the typical flight of ideas in the broadest sense is, as a rule, not present. The occurrence of epileptiform attacks is distinctive.

The *treatment* of these cases is symptomatic. What has already been said in a general way in reference to the treatment of states of mania or depression may be applied to the care of patients during the attacks of manic-depressive insanity. In the case of a young person it is the duty of the physician to inform the parents or guardians that the tendency of the disease to recur is very great. The life of the afflicted individual must be so ordered that all forms of excitement, physical or mental, are reduced to a minimum. If the circumstances permit

an out-of-door life in the country, it is to be recommended. Great care should be exercised during the onset of puberty. If the patient becomes conscious of too great supervision of all the minor details of his or her life, the periods of mild depression are augmented or the development of a marked hypochondriasis may be generated. During the period of excitement care should be taken to guard against the occurrence of sexual irregularities. The mildest cases may be treated at home provided the physician fully comprehends the nature of the disorder and is fully alive to the exigencies of the case. The severer cases can be handled much better in an institution, where a rest-cure in bed with massage, hydrotherapy, and a light and nutritious diet can be provided.

As the tendency of manic-depressive insanity to recur in families is very marked, marriage in the case of individuals who have once suffered from this form of alienation is contra-indicated. During the periods of excitement the prolonged or continuous baths are often efficacious in cutting short an attack. During the periods of depression as well as during the excitement the patient should be kept constantly in bed. During the former phase as well as during the milder attacks of manic excitement, in moderate weather, the bed may be wheeled out on the porch or balcony and the patient kept in the open air. This is particularly desirable in cases of anemic individuals. Where such a procedure is not possible the windows in the room may be opened wide for several hours a day, so that the patient in this way may be given plenty of fresh air. During the period of depression the patient may be put in a warm bath, and if there is no contraindication, the temperature of the water may be gradually cooled, the patient being carefully watched to see that no ill effect follows this procedure. After the bath massage and passive movements are frequently of great value in stimulating the superficial circulation. In many cases tonics, such as iron, strychnin, and arsenic, are indicated. In the cases of manic-depressive insanity which occur in plethoric individuals it is advisable that the diet should be carefully restricted. The patient must be

PLATE VIII



closely watched, as such individuals, although apparently very robust, are physically below the standard and frequently show a marked anæmia.

Pathology.—The pathological findings in cases of manic-depressive insanity do not throw any light upon the nature of this disease. Patients do not die from the immediate effects of the disorder itself, but from some intercurrent affection. The histological changes in the neural elements of the central nervous system are those found in other chronic or acute diseases. Turner has described alterations in the nerve-cell which were affirmed to be in a measure specific for the so-called delirious manias, but on more careful investigation similar changes were found to be present in other conditions. Great care should be exercised in examining the central nervous system and in basing deductions as to the pathogenesis of the disease upon the occurrence at autopsy of cerebral hyperæmias. Not infrequently the marked injection of the vessels of the membranes and cortex is merely an agonal or post-mortem change, the result of alterations in the blood-supply due to the position of the body. It is true that the maniacal stage is very often associated with low blood-pressure in the peripheral arteries, while in the stage of depression the reverse holds good; but that the intracranial tension is either increased or lowered can not be decided from the condition of the peripheral circulation. Pilcz [20] affirms that in ten cases reported there were no marked pathological changes found in the central nervous system. In seven cases scar tissue was reported, and in ten instances other changes were noted. The findings in the central nervous system in two cases reported by the author were practically negative. Stoddart [21] has formulated the hypothesis that in mania an irritating product is formed within the cortical cells, while in melancholia the effect of the toxic agent is paralyzing. This same observer thinks that in a few cases of mania, in addition to the poison originating within the nerve-cell, a toxic substance also occurs in the plasma.

[20] Op. cit., and Beiträge zur Klinik der period. Psychosen. Monatsschr. f. Psych. u. Neurol., December, 1909.

[21] Stoddart, W. H. B., Lancet, London, March 5, 1910.

CHAPTER XIV

THE DEMENTIA PRÆCOX GROUP [1]

Although the various forms of alienation recognized under this head present a symptomatology with definite and distinctive features and in a majority of instances a terminal dementia that is essentially characteristic, it is not improbable that dementia præcox does not form a disease entity. The clinical conceptions that have resulted in this assignment of cases have been of comparatively slow growth.[1] As will be seen later, this group of symptom-complexes is formed by the union of several clinical types of alienation that have hitherto been considered distinct. Among the more important of these are the cases originally described by Kahlbaum as instances of catatonia, a psychosis considered by him from a diagnostic and prognostic stand-point to be a disease entity.[2]

In his classical monograph catatonia was defined as a brain disease characterized by cyclic, alternating periods of melancholia, mania, stupor, confusion, with associated motor disturbances, and terminating in dementia. From this clinical picture one or more of these symptoms may be absent. The prognosis was admitted to be favorable in some cases; in others death might occur during attacks of catatonic rigidity and excitement. Remissions were infrequent and the hereditary factor was considered unimportant. Kahlbaum called particular attention to what he considered to be distinctive features of the catatonic symptoms. Neisser[3] emphasized the necessity of considering the clinical picture as a whole as definitely char-

[1] Arndt: Ueber die Geschichte der Katatonie. Centralbl. f. Nervenheilk. u. Psych., 1902, p. 61.

[2] Kahlbaum: Ueber das Spannungsirresein. Vortrag auf der Naturforscherversammlung. Ref. Archiv f. Psych., v., 1875. Kahlbaum: Die Katatonie. 1874.

[3] Neisser, C.: Die Katatonie, 1885.

acteristic, and did not lay great stress upon the diagnostic value of individual symptoms. Prior to the appearance of Kahlbaum's monograph on catatonia, Hecker[1] had described a group of cases in which the mental symptoms developed about the time of puberty in individuals hereditarily predisposed towards insanity. The outcome in these cases was a termination in a similar characteristic dementia. These observations were confirmed by Hack Tuke[2] and Fink.[3] In 1886 Schüle affirmed in words that have become classic that of those hereditarily predisposed individuals who are "wrecked on the cliffs of puberty," some become hebephrenics, while others are afflicted with an acute dementia. For this latter group he suggested the name dementia præcox.

In 1890 A. Pick, basing his observations upon those of Kahlbaum, came to the conclusion that hebephrenia was a form of dementia præcox. Under this latter term Pick included the class of diseases beginning at puberty with a quiet onset and ending in a progressive dementia.

In 1892 Daraszkiewicz, under the influence of Tschisch and Kraepelin, broadened the conception of hebephrenia so that the severe and protracted cases were grouped together with the shorter and milder instances described by Hecker. Thus the bridge was formed between the two groups. It was affirmed that the marked apathetic dementia developed either insidiously or followed periods of acute excitement. It is thus apparent that the genesis of the present views regarding hebephrenia was in a measure determined by the increased emphasis placed upon the prognosis. The possibility of uniting the two disease groups was first definitely suggested by Kraepelin, who in the sixth edition of his text-book brought together the various forms of alienation which will be described under this head.

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[1] Hecker: Hebephrenie. Virchow's Archiv f. path. Anat., 1871, Bd. 52.

[2] Hack Tuke: A Manual of Psychological Medicine, 1879, p. 345.

[3] Fink: Ein Beitrag zur Kenntniss des Jugendirreseins. Allgem. Zeitschr. für Psych., 1881, Bd. xxxvii, S. 48.

He admits that other names, such as the demenza primitiva of the Italians or the dementia simplex of Riger, may have certain advantages. Quite recently [7] the objections to the use of the name dementia præcox as a general term have been more definitely formulated.

The fact that within the near future certain types of cases now described as dementia præcox may be taken out of this group does not detract from the importance in clinical psychiatry of the formulation of those conceptions upon which the present clinical analysis is based. The fact cannot be too strongly emphasized that in studying this psychosis too much stress should not be laid upon the individual symptoms presented by a patient at any one period of the disease. It is the study of the condition as a whole, including the onset, course, termination, and general symptomatology, which promises the best practical results. Little progress was made in the study of dementia paralytica so long as clinicians were satisfied with simply grouping together the symptoms which occurred at any given period of the disease without an equal regard for the known facts connected with the etiology, termination, and prognosis as well as with the clinical course.

The triple clinical division suggested by Kraepelin—namely, the hebephrenic, catatonic, and paranoic forms of the disease—is fairly satisfactory if the attempt at differentiation is not pushed to the extreme. Little is to be gained by the efforts sometimes made to distinguish too sharply between these groups, as many of the symptoms are common to all three forms. Until more is known regarding the natural history of this disease it is ill-advised to try to adhere to a too rigid clinical classification.

The majority of the cases develop between the twentieth and thirty-eighth years, although competent observers have reported the outbreak of the symptoms before the fifteenth and as late as the fiftieth year. The periods of puberty and

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[7] Sommer, Robert: Beiträge zur Psychiatrische Klinik. Marburg. Bd. i, Heft 4.

adolescence are unquestionably the times at which the majority of the cases develop. But it leads to unnecessary confusion if the possibility of the occurrence of cases at later periods of life is denied. The importance of this fact is more generally recognized by Continental writers than by English and American alienists. The onset of the disease is frequently insidious, owing to the so commonly slow progression in the earlier stages of its development no less than to the protean character of the symptoms. There is no other form of alienation in which an intimate knowledge of the individual is of greater importance as an aid in establishing the diagnosis at an early period of the disease than in dementia præcox. While it is incumbent upon the alienist to recognize the malady early in its course, the fact should never be lost sight of that the continual striving to discover symptoms supposed to be of specific diagnostic value may be carried to an extreme. In many instances the signs of mental aberration may be obvious for a considerable period of time prior to the appearance of symptoms now generally recognized as distinctive of this psychosis.

Cases with an acute onset are not infrequently reported, but it is extremely doubtful whether such actually occur. In many instances the apparently sudden onset is found on closer examination to be merely an exacerbation of previously existing symptoms.

For example, a young man came under observation in the dispensary of the Johns Hopkins Hospital giving the following history: The patient affirmed that he had felt perfectly well until a few days before his marriage, but had then become excessively nervous. The day following this event he went off with several friends and drank to excess, although he did not become intoxicated. He came home that night, complained of not sleeping well, and the next morning on awakening suddenly sprang out of bed, seized his wife by the throat, and almost choked her to death. He threatened to kill several members of the family who tried to quiet him. Although conscious of what he had done, he was unable to assign any motive for his acts of violence and was willing to admit that they might be considered those of an insane person. The overwhelming power of the impulses was recognized by the patient. Gradually these obsessional acts ceased, but the conduct of the patient was so eccentric that he was advised to come to the Sheppard and Enoch Pratt Hospital for treatment.

Although the history of the case given by the family at first suggested the possibility of an acute onset, more careful inquiry elicited the fact that the patient had exhibited mental aberration for a considerable period of time prior to this outbreak. The subsequent development of the case proved it to be one of dementia præcox.

Another instance was that of a young woman 24 years of age who was said to have been perfectly sane until she had an acute outbreak of mania. Later it was discovered that the patient for years had been decidedly neurotic. She had always been painfully shy and over-particular regarding her dress. She was described as being imperious at times and emotionally unstable.

In the early stages, particularly in young girls, attacks of migraine may precede or usher in the symptoms. Either prior or subsequent to these attacks of pain there is some mental depression. Occasionally the early symptoms are referred to an acute attack of some disease, such as influenza, typhoid fever, scarlet fever, etc. Although it is probable, then, that dementia præcox does occur in individuals who until the time of onset have shown no sign of mental deterioration, too great emphasis can not be put upon the necessity of careful inquiry, not only regarding the patient's personal peculiarities or idiosyncrasies, but also as to the nature of the environment and antecedents prior to the onset of the attack.

The *prodromal symptoms* usually extend over a period of years. Children who have given every promise of a normal mental development may in the first years of adolescence show evidences of a gradual progressive mental decline. This deterioration may be so slow and yet so widespread that it is difficult for a long time to recognize special defects involving separate functions. Irregularities in the emotional life nearly always accompany the intellectual decay. Individuals who have never displayed marked emotional disturbances until the onset of neurasthenic symptoms and then without apparent cause give evidence of constantly recurring outbreaks of temper on little or no provocation should be kept under close supervision. Such patients not infrequently resort to unprovoked violence, and then after the act is committed express regret for their conduct, but, nevertheless, true penitence is not observed. The development of these symptoms should at once awaken sus-

picion. Cases not infrequently come under observation in which impulses seem to replace all motives. The emotional storms which are occasionally exhibited early in the development of these cases are essentially different from those common to cases of hysteria or neurasthenia. In the former there is an explosive violence entirely without motive and the event may be isolated and soon forgotten; whereas in the latter group of cases an apparent motive for the excitation of feeling may almost always be found and is generally associated with a period of hypochondriacal depression. The acts of violence due to an emotional storm awaken in the neurasthenic a feeling of repentance, but the sense of contrition in patients suffering from dementia praecox is entirely superficial. The emotional impulses, having the character of obsessions, which not infrequently crop up during the prodromal period, are apt to be transitory and evanescent. A young woman without the slightest reason to fear such an event hears a step on the stairs, fears that an intruder will force himself into her room, gives vent to an apparent emotional outbreak, which passes away as quickly as it came and the incident is promptly forgotten. Every sensory stimulus at times seems to awaken the starting-point for a new chain of disconnected heterogeneous ideas. There is an apparent incoordination as well as disorganization of thought. Local systematized delusions seldom develop early in the disease except in the paranoic form. Not infrequently, however, various disturbances of sensation may occur. Early in the disease patients complain of singing in the ears, "strange sounds" in the head, pistol shots, bright flashes of light, or the like. Olfactory hallucinations, particularly of an unpleasant character, are not infrequent. One meets with psycho-anesthesias having the character and distribution of purely functional disorders. Paresthesias are less common. At first the disturbances in sensation may be practically unnoticed by the patient until his attention is directed to them. Gradually the tendency to explain their occurrence becomes more apparent. Psychic hallucinations frequently occur. Their importance in the early stages of the disease has recently been

emphasized by Lugaro.* This observer affirms that in cases of dementia præcox, particularly in the paranoiic forms of the disease, the pseudo-hallucinations are frequently met with. Real hallucinations are either very infrequent or do not occur at all. The memory is well preserved. The power of ideation is unimpaired, although there is a marked disturbance in the sequence and relationship of the products of thought. The disturbed mental action consists largely in the abnormal elaboration of the voluntary impulses. Arrested impulses dominate, as it were, the field of psychic activity. The psycho-pathology of these cases may be reduced fundamentally to a disturbance in the primary elaboration of stimuli, volitional impulses, etc., of which pseudo-hallucinations are correlative phenomena. The anomalies in the organic sensations, particularly the visceral, are noticeable in the very earliest stages and are frequently associated with the occurrence of the epigastric voices, etc.

In addition to psychic hallucinations insane ideas are frequently met with. Except in the paranoiic forms of the disease, systematization is, as a rule, not well marked. The ideas, as expressed by the patient, show plainly the marked disorganization in connected thinking. The emotional tone of the patient when describing these ideas is, as a rule, one of apathy, broken only by acts which are more frequently the result of mere impulse than the consequence of the dominating force of the ideas. In some cases, particularly those in which the disease progresses slowly, hypochondriacal ideas are present. The patients affirm that changes have taken place in their internal organs, that they are losing their minds, that their energy is fast disappearing, that they are unable to arouse themselves to action. At times megalomania may develop; the type, however, is essentially different from that seen in dementia paralytica. The silly exaggerations are prominent. The ideas expressed are grotesque, bizarre, and sometimes suggested by the environment. An event or an object is mentioned by a patient, and

*Lugaro, E.: Sulle pseudo-allucinazioni (allucinazioni psichiche di Baillarger). Riv. di Patologia nervosa e mentale, vol. vii, fasc. 1 and 2

coupled with this there is an insane idea entirely irrelevant, its presence having apparently been suggested by mere spatial or time contiguity.

Sometimes patients complain of receiving electric shocks concerning the nature of which they may develop vague suspicions, affirming that they have been given to them by certain individuals. In the early stages these phenomena are recognized as abnormal. Occasionally to the imperative conceptions exaggerated ideas may be added. The patients complain that they can not get rid of these feelings, although occasionally they admit their inability to reason logically concerning the occurrence of these phenomena. Some affirm that the repetition of these sensations or the persistence in the field of consciousness of an imperative conception will in time compel them to do or say things of which they will be ashamed. The majority of the patients do not suffer great mental anguish. This is in a measure characteristic. There is more or less apathy. Emotional storms may gather, break, and disappear, leaving the patient in a state of apparent indifference.

Among the cases of dementia præcox which are found among dispensary patients a number give a history of attacks of mental depression occurring early in the disease. As a rule, these periods of depression are not accompanied with hypochondriacal symptoms. The patients, when they are asked to, assign a reason for their depression, but if left to themselves are listless and apathetic. A conscientious, hard-working student becomes mentally depressed. He affirms that he has been derelict in the performance of his duties, is most persistent in his declaration that his only chance to succeed in life has been thrown away. The affirmation is made and persistently adhered to, but the statement lacks any of the earnestness that carries conviction with it.

In nearly all cases there is a general blunting of the emotional tone. This is very characteristic. The patients become indifferent to their most intimate friends as well as to members of their family. Occasionally in the earlier stages of the malady appreciation of this change is noted by the patients

themselves. Not only is there marked impairment of the patient's sympathies and affections, but at times a paradoxical reaction in the objective expression of the feeling tone occurs. Stransky[9] has emphasized the importance of the incongruity in the affective state between the ideation and the emotional reaction (thymopsyche and noopsyche). This symptom is indicative of dissociative incoördination of the cortical functions —*an intrapsychic* ataxia. Patients not infrequently indulge in buffoonery even while they affirm that they feel depressed and sad. The exaltation which occurs is essentially different from that of the maniacal patient. The individual is silly, "mad as a March hare," and gives outward expression to the intellectual as well as emotional impairment. The humor, wit, and vivacity sometimes noticeable in cases of excitement due to alcohol or marking the early stages of manic-depressive insanity are lacking. The precocious dement is indifferent, lackadaisical, and at times singularly impulsive and impetuous without being passionate.

The synchronous appearance of a slow psychical reaction, very difficult to distinguish from the psychomotor retardation in the period of depression in manic-depressive insanity with mental apathy, when taken in conjunction with other symptoms, is of diagnostic importance. This phenomenon, recently described by Dunton,[10] has been noted during the early stages of the disease in a comparatively large number of cases. There seems to be little, if any, difficulty in the transference of either afferent or efferent stimuli, but the working up and elaboration of impulses after their reception is apparently more difficult than normal. If a patient in this state is questioned, not infrequently two or three seconds elapse before there is any objective evidence of an attempt to respond. Then the reply is given, generally in a low, monotonous tone. By careful examination

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[9] Stransky: Zur Kenntniss gewisser cerebraler Blödsinnformen. Jahrbücher f. Psych. u. Neurol., Bd. xxiv, Heft 1.

[10] Am. Journ. Insan., vol. lx, No. 1, 1903.

evidence may be obtained that there is no delay in the transmission of the impulse to the cerebral cortex, and there is no subjective sense of deficiency such as occurs in the period of depression when the psychomotor retardation is marked. This preservation of the so-called primary sensations is characteristic of nearly all cases of dementia præcox in the earlier as well as in the advanced stages of the disease. The fact that the conduction of sensory impulses from the periphery to the centre is rapid and apparently normal favors the occurrence of various forms of hallucination. The orientation, as a rule, both for time and place, is not seriously affected, although patients may affirm that they do not know where they are. In some cases this is due to the apathy which exists, but in others it is merely an expression of the patient's desire to be left alone. Another cause for the apparent disorientation occasionally met with is the consciousness the patient has of subjective difficulties in formulating his ideas. This gives rise to a marked disinclination to speak. Patients realize their inability to carry through to its logical conclusion a train of thought and therefore refuse to talk. This disinclination is, as a rule, in the early stages due to two factors: first, an appreciation of the subjective difficulty in the association of ideas; and, second, the emotional state engendered by hallucinations or illusions gives birth to suspiciousness and a consequent reticence. This symptom is not infrequently met with in the earlier stages, but becomes much more marked as the disease progresses. The antagonism aroused by interference from without varies in different cases. In the catatonic form of the disease this so-called *negativism* is well marked. The passive resistance to all forms of interference offered by the patient in the later stages is motiveless and purely capricious, although at first it may be the result of an insane idea. The genesis of these refractory states has been discussed in the first part of the book. The absence of a well-defined motive, the disorganization of connected thinking, and the anomalous emotional state are the factors that are responsible for the actions of the patient. In the earlier stages not

infrequently a motive is given by the patient for his actions. Gradually this vanishes and his conduct becomes aggressively resistive in response to all stimuli. He refuses to speak or, if he does, gives audible expression to his feelings in as few words as possible. He refuses to look the examiner in the face, closes his eyes, and may struggle violently to get away from the physician or attendants. In the exaggerated cases the patients cover themselves up with blankets, or hide under the bed, in the closets, in out-of-the-way nooks and corners, even refusing nourishment and refraining from voiding urine or evacuating their bowels until actually compelled to do so.

In addition to negativism, *stereotypies of attitude* and action are in a measure characteristic. As has already been said in Section I, a motive or an insane idea is primarily the inciting factor. Gradually this idea disappears and the movements crystallize and remain permanent. The limitations in the field of consciousness and the tendency of physiological processes, when once initiated, to persist are the factors which give rise to these symptoms. In the earlier stages the stereotypies are sometimes difficult to differentiate from tics. An example of this was seen in the case of a man who came under observation in the Johns Hopkins Hospital Dispensary and proved to be suffering from one of the slowly dementing forms. He was accustomed at every few steps, as he walked, to rub the calf of the right leg with the toes of the left foot. When asked why he did this the patient affirmed that his leg itched, but it was obvious that while a paræsthesia might originally have been the cause of this stereotyped movement, later it had become automatic. The stereotypies of movement may affect the extremities and the face. Not infrequently patients make curious grimaces, grin in a stereotyped manner, pucker up their lips (the snouting cramp), make kissing sounds, etc. The habits of the patient prior to the onset of the disease in a measure determine the character of the stereotypies, the movements which are the most familiar to him showing the greatest tendency to recur. The muscles of the trunk may be similarly

affected. Patients gesticulate or assume strange theatrical attitudes. Their gait becomes stiff, pantomimic, in a measure pathognomonic. The speech is changed, but at first only occasional eccentricities attract attention. The vocabulary is limited. The words used show a remarkable degree of precocity, are strange and outlandish. There is a tendency to repeat certain words and phrases. In the advanced stages of the disease the repetition of senseless syllables is more or less habitual. There is no difficulty in the mechanism, but merely in the forms of expression. These are stilted, quixotic, fantastic, incoherent, and often extremely silly. At times the patients interject a few senseless syllables and then return for an instant to the conversation only to relapse again into utter foolishness. As the disease progresses the incoherence and silliness become more and more marked, and we often have merely a verbal hotch-potch or, as Forel has termed it, a word-salad (Wortsalat).

The eccentricities and mannerisms of speech are duplicated in writing; the tendency to repeat words, syllables, and phrases is very marked. The example given in Chapter III, page 33, shows an attempt made by the patient to write out an account of her physical condition.

Not infrequently cases of *mirror writing* are reported. Patients not infrequently give expression to their thoughts either audibly or in writing in the form of doggerel. The style of the verse is stilted, bombastic, or inordinately foolish. In the later stages of the disease the speech may be limited to the mere repetition of a few words or senseless syllables.

Another important symptom which frequently occurs, sometimes in the earlier as well as in the later stages of the disease, is the *grotesque irrelevancy exhibited in replying to questions* (Paralogia, Vorbeireden). This symptom-complex was first described by Ganser[11] and consists in the apparent

[11] Ueber einen eigenartigen hysterischen Dämmerzustand. Vortrag gehalten am 23. October, 1897, in der Vers. der mitteldeutschen Psychiatr. u. Neurologen in Halle. Arch. f. Psych. u. Nervenkrankh., xxx, S. 633.

inability of the patient to answer directly or satisfactorily the simplest questions. With the exercise of a little care it is possible to elicit the fact that patients frequently retain a fair degree of comprehension of what is asked them, but the reply is disconnected and inapposite to a degree. Although an apparent effort is spasmodically made to answer the question, the patient seems unable to focus directly upon the essential point in his reply.

Example.—Female, single, aged 28. The first symptoms of alienation were noted several years ago. The present attack began in 1900. She felt the attack coming on and tried to fight against it. There were alternating periods of depression and excitement, impulsive acts and marked dementia. The patient's present condition is such that she has to be carefully watched; she is very impulsive and erratic; will suddenly jump up from her chair and walk in an aimless way up and down the wards. She has struck patients and attendants and is unable to feed herself. The primary sensations are well preserved. When questioned she occasionally gives a prompt reply, showing that there is no obstruction in the afferent tract. At other times the question has to be repeated several times before it is apprehended. She makes an occasional low whining sound, is continually smacking her lips as if kissing some invisible person. Some of the questions and answers are as follows: Q. How are you? A. I am tolerable, I am sick, I need a cure, I need to go to heaven. Q. Where do you think you are? A. I do not know. Oh, yes, I am here, I am here on the bed. Q. How long have you been here? A. I have been here a long time—already—I want the Bible in my hands. Q. What do you want in your hands? A. I guess it would be flies. Oh, no, she must not; oh, yes, the Bible. Hand me the paper and the pencil, let me write, write the other way. Won't you please send for a watermelon? That would do me good. I want some water. The patient was asked why she behaved in such an extremely foolish manner. To this she replied, "Because it is that girl that causes me the nightmare. Oh, please send some food." Q. Are you hungry? A. Yes; I want something in my stomach, I want some one to kiss me. She recognizes a pencil and an eyeglass when shown to her. She begins to cry when shown a penknife, but cannot assign any reason for this emotional disturbance. She suddenly shouted out, "Keep on writing down things, send some things, I want to go to town. This is me, this is me." Q. What is your name? A. You kiss me, you kiss me, then it will be all right. You kiss me, you kiss me, you feed that child on the right food. Q. Where do you want to kiss? A. I do not know. Did you bring me any c-a-k. Oh, don't go, mother.

The patient frequently makes mistakes concerning the identity of persons. Refers to one patient as "little blind boy." Sometimes calls the nurse mother, at other times Aunt Betsy.

This grotesque irrelevancy has more recently been made the subject of careful study.[12] On account of the fact that this symptom is not infrequently associated with verbigeration, mild cataleptic states, negativism, echopraxia, and echolalia, Nissl affirms that in the large majority of cases it is diagnostic of dementia præcox rather than of hysteria. Quite recently attention has been called to another symptom that may be referred to causes similar to those upon which the irrelevancy of speech depends. It is well illustrated in the manner in which patients comply with the request to shake hands, doing so in an irresolute, more or less indifferent manner, as if the command were only feebly comprehended. Frequently during the period of catatonic excitement there are verbigeration and the rhythmic repetition of numbers, syllables, and words which are indirectly related either to the content of the question or to the sound of the word. According to some authors, the essential characteristic of the complexity of the manifestations in this form of mental disorder is the evident lack of correspondence between the motor symptoms.[13] This statement, however, needs to be qualified. The movements are frequently characterized by an absence of unity of purpose and of coördination which contrasts strikingly with certain phases of the mental state of the patient. For example, patients not infrequently exhibit stereotypies, catatonic rigidity, incoördinated and involuntary spasms, while the mental examination shows that they are well oriented and that there is comparatively little disturbance in the power of recollection. But this dissociation between the mental and motor disturbance is apparent rather than real. A careful study of a case shows

[12] Récke: Beitrag zur Kenntniss des hysterischen Dämmerzustandes. Zsche. f. Psych., lviii, S. 113. Hysterischer Stupor bei Strafgefangenen. Ibid., S. 408. Nissl: Hysterische Symptome bei einfachen Seelenstörungen. Centralbl. f. Nervenheilk. u. Psych., Nr. 144, S. 2. Westphal: Ueber hysterische Dämmerzustände und das Symptom des Vorbeiredens. Neurol. Centralb., 1903, Januar 1, Nr. 1, S. 7.

[13] Paul Masoin: Observations sur la démence précoce et la catatonie. Bull. de la Société de Médecine Mentale, Decembre, 1902, No. 107, p. 366.

that there is a functional inhibition affecting the motor as well as the psychical powers. In dementia præcox the cerebrum seems to have lost the faculty of responding coördinately to external stimulation, while a purposeless inexplicable inhibition dominates all the cortical functions with tyrannical power.[14]

Hebephrenic Form.—This division includes two groups of cases of which the first represents the type of disease originally described by Hecker. Here we have to do with a chronic slowly progressive form of dementia with few evidences of negativism, stereotypy, motor excitement, or impulsivity. The apathy and progressive dementia are the prominent symptoms. For these cases Weygandt has proposed that the term dementia simplex or heboidophrenia (the latter originally suggested by Kahlbaum) should be retained. He reserves the name hebephrenia for a group of cases which exhibit marked emotional disturbances, periods of excitement and of depression, frequently accompanied by active hallucinations and illusions, while a terminal dementia is common to both forms. The characteristic catatonic symptoms, such as mannerisms, catalepsy, negativism, stupor, and marked motor disturbances, do not become pronounced features. The essential difference in symptomatology, according to Weygandt, between dementia simplex and hebephrenia lies in the fact that the former runs a more chronic course than does the latter group. Wernicke[15] affirms that heboidophrenia or heboid possesses more of the characteristics of a specific psychosis than does hebephrenia. Although clinically an attempt to establish distinctions between the two groups of cases may possess certain advantages, it is impossible to draw sharp and definite lines in all cases. The tendency to adhere to too rigid a classification may retard

[14] The motor symptoms play a very important part in the clinical picture of the disease. The observations of Bernstein are of great interest in this connection. He has called particular attention to the increase in the mechanical irritability of the muscles and the formation of the so-called idiomuscular swelling or tumor. (A. Bernstein: Ueber die klinische Bedeutung der Muskelwulst bei Geisteskranken (Russisch), Moskau, 1900.)

[15] Grundriss der Psychiatrie, 1900, S. 518.

PLATE IX



This drawing was made by a patient during a period in which extreme excitement. The composition indicates the interaction of the [illegible] sensations and a well-organized consciousness of the environment.

progress by emphasizing differences which are apparent rather than real; and for this reason at the present it is inadvisable to subdivide this group of cases.

The onset in this form of the disease is not essentially different from that already described as characteristic of all forms of dementia præcox. As a rule, there is less probability of the onset being acute than in the catatonic cases. If a careful history is obtained it is generally possible to show that the patients for years prior to the onset of the more definite symptoms of alienation have exhibited eccentricities of character. They are said by their parents to be seclusive, to shun other children, to be jealous, over-particular in matters of dress, and generally hypercritical. Up to a certain period, generally about the time of puberty, these patients may develop rapidly intellectually, but show marked capriciousness and general emotional instability. They may be very proficient in certain subjects but exceedingly deficient in others. Their psychical as well as their physical resistance is frequently lowered. As a rule, the patients are described by those who have known them as always having been pale, thin, and nervous children. The emotional disturbances are characterized by sudden and explosive outbursts of temper. Not infrequently the children who later become hebephrenics are said by their parents or friends to have been even in early life at times over-pious or excessively conscientious. At times they are given to brooding long upon subjects which generally do not interest children of their age. When the period of puberty approaches these individual idiosyncrasies become more marked; the patients grow more seclusive, more irritable, and markedly emotional. The eccentricities of character begin to crystallize. It is noted by their friends that they rapidly become singularly unconventional and are looked upon as "queer fish." When perchance an acute infectious disease, such as scarlet fever or influenza, intervenes, or they suffer some injury or some psychical shock, they convalesce but slowly from the effects. The eccentricities of character now become exaggerated and the emotional apathy becomes a prominent symptom, taking the place of the exces-

sive enthusiasm, transports of love, and foolish infatuations that have occurred during the earlier stages. The memory may or may not be greatly impaired. Vague suspiciousness develops. The patient becomes self-centred, gives expression to indefinite fears, is distrustful of the members of his immediate family. If transitory emotional storms develop, it is noticed that the depth of feeling is not commensurate with the display. This is a factor of great importance. Even during the period of greatest storm and stress evidences of this apathy may be detected. At times the sense of well-being is apparently intensified. The patient smiles in a foolish way, says that he never felt better, is perfectly satisfied with himself and the world in general. This state of complacency is not persistent and differs essentially in this respect from the euphoria of paresis and other conditions. When the disease has developed the disturbances in associative thinking are generally marked. Some patients rarely take the initiative in conversation, while in others there may be a typical disorganized ataxic expression of ideas with considerable speech compulsion, differing essentially, however, from that seen in the maniacal states. The complaints made by the patients are frequently numerous and varied. They affirm that something is queer in their heads, deplore their state of mental depression, complain of insomnia, of disturbances in the various organic sensations, that they are subject to paræsthesias or neuralgias. But even these lamentations are devoid of emotional feeling. In the milder cases the hallucinations and delusions are lacking in vividness and sensory plainness. They are sometimes referred to as simple light or color sensations or indefinite sounds. At other times the patients affirm that they see grotesque and bizarre figures or hear voices. In a comparatively large number of cases these disturbances of sensation seldom reach any degree of severity.

There is marked disturbance in the volitional sets. The patients lounge about the house or the wards. The facial expression is apathetic. When asked why they do not occupy themselves, they reply that they are unable to do so or refuse to assign any reason. At times they sit motionless for hours,

taking little interest in their surroundings. The dull expression of the face may occasionally be broken by the sudden inexplicable appearance of a silly smile which flits across the countenance and rapidly vanishes. The changes in expression are purely impulsive. The orientation in the milder cases is fairly well preserved. Not infrequently in testing the memory it is observed that many patients give correct answers to a number of questions and then suddenly the replies become irrelevant, farcical, and puerile. The breaks in memory are frequently startling. The patients remember coming to the hospital, give



This is a facsimile of the handwriting of a case of dementia præcox (terminal stage). The patient was asked to give a short résumé of a monograph he had once written upon a certain tribe of Indians. The request had to be constantly repeated by the examiner, as the patient, after writing one or two words, would suddenly break off and attempt to leave the room.

the year correctly, the day of the week and month, and then fail utterly to recall their own names. The grotesque irrelevancy in their replies, to which allusion has already been made, is not infrequent in this form of the disease.

As the dementia progresses many of these patients exhibit occasional signs of negativism, stereotypy, and automatism, but there are cases in which these symptoms are more or less marked from the beginning to the end of the disease. In the latter the diagnosis is frequently very difficult and can only be made after

the patient has been under observation for a considerable period of time. This *simple demenring form* is of great practical and forensic importance.[19] The onset is very insidious. The defects in intelligence and anomalies of emotions may be very slight. The specific symptoms do not develop. The progress is exceedingly slow and the course may be masked by long periods during which the patient's condition remains unchanged. In the lower classes of society these patients are frequently found among the tramps and vagabonds. On superficial examination it is impossible to demonstrate any marked mental defect. Thought that does not require much concentration or protracted effort is unimpaired. If, however, the patient's attention is long riveted upon one theme spasmodic irrelevancy and a tendency to jump from one topic to another may become apparent. Written as well as spoken language may be formally correct. Orientation and the power of picking up and retaining new impressions is fairly well preserved. Ethical defects sooner or later become obvious. These are apt to be noticeable first about the time of adolescence. Individuals resent discipline, become antisocial, addicted to drugs, particularly to alcohol, but do not give such marked evidences of sexual excesses or irregularities as are met with in the other forms of the disease. The same is true in regard to the commission of actual crimes. These are common in the severer types of the disease if the patient's liberty is not restricted, but vagabondage and the commission of minor offences characterize many cases of this slow demenring type. The intolerance for alcohol is marked. This symptom alone may be the means of bringing the patients to hospitals for observation and treatment. As the disease progresses the individuals may be thought to be merely very eccentric or ethically deficient, but the true character of the disorder is seldom recognized. Very gradually, it may be after the lapse of years and without the occurrence of acute exacerbations, the signs of dementia præcox appear.

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[19] Diem, Otto: Die einfach demente Form der Dementia Præcox. Archiv f. Psych. u. Nervenk., Bd. xxxvii, Heft 1.

Catatonic Form.—The most prominent symptoms in this form of the disease are cyclic alternating periods of depression, mania with characteristic motor disturbances, stupor, and confusion. Their relative prominence in individual cases varies considerably. In some instances the depression and stupor are more marked, in others the excitement and motor symptoms. The affirmation made by some observers to the effect that characteristic motor symptoms may be entirely absent during the whole course of the disease is not confirmed by the clinical evidence. On the contrary, careful routine examinations made at different stages in the disease show that they are always present. Patients whose symptoms are so obscure that it is at first impossible to recognize them as catatonic are frequently admitted to hospitals. More frequently even than in the other forms of the disease a history may be obtained from the relatives or friends which at first suggests the possibility of an acute onset. We find that after an acute attack of illness the patient had convalesced but slowly and during this period, while subjected to some unexpected physical or mental strain, the symptoms of catatonia developed. As a rule, the signs of mental depression are the first to appear. This type of melancholy is often difficult to differentiate from that occurring in manic-depressive insanity. At times the patients pass from depression into a period of mutism which may persist for days, weeks, or even months. Generally at some time during this interval there are well-marked symptoms of negativism. If the patient is in bed, immediately on the approach of the physician the bedclothes are drawn over the head, the slightest touch is resented, and every attempt is made to get beyond the reach as well as out of the sight of the examiner. Patients who are so afflicted and are walking about the wards run to a far corner, hide behind the door, in the closets, under the bed. If restrained, they often resist actively. If the head is held, they refuse to look at the physician. To the casual observer the negativistic symptoms seem to develop without rhyme or reason. All forms of external stimuli seem to arouse an aimless, capricious, silly resistiveness. Frequently such patients struggle violently, without

uttering a sound, to get away from the nurse or attendant or may burst out into a silly laugh. Sometimes they become very angry, but this emotional display generally indicates the presence of some delusion. The negativism may persist for weeks at a time. During this period patients frequently refuse all nourishment, so that forced feeding has to be resorted to. There may also be a voluntary retention of the urine and faeces. In addition to negativism marked stereotypy of word and action may become a prominent feature. The patients will stand for hours in one spot. If the condition known as *cerea flexibilitas* is present they maintain for long intervals of time any attitude in which they are placed. At times catatonics seem to have a very restricted capacity for holding idiomotor images in consciousness. If the arm is elevated and placed in an uncomfortable position there is no tendency to allow it to fall either in response to various forms of pain stimuli or when the other arm or a leg is put in an equally uncomfortable position; but the moment the attention is directed to carrying out some voluntary act, such as protruding the tongue, closing one eye ,or flexing and extending the fingers, the arm which has been elevated slowly drops to the side. During the earlier stages of this depression, which is more apparent than real, a condition suggesting psychomotor retardation develops. The more carefully the patients are studied the less obvious becomes the actual change in the emotional tone. What was at first taken for depression is found in reality to be apathy. If the patient during the period of depression tells us of certain hypochondriacal feelings, a marked incongruity between the objective expression and the emotional tone can be detected. In the very earliest stages this apathy is evidenced by a certain degree of restlessness, lack of interest in the surroundings, and an evident embarrassment which is increased when the patient is conscious of being watched. This state is evanescent in character. During this period patients not infrequently are very impulsive and may show marked suicidal tendencies. Acts are not performed with any degree of deliberation and seem to be the result of pure impulse. When the depression deepens a catatonic stupor may intervene. To all outward ap-

PLATE X



Case 8. Schizophrenia, a slowly developing case of dementia praecox. When first present[illegible] under observation at the Johns Hopkins Dispensary there was only a very mild degree of dementia present.

pearances the patient leads a purely vegetative existence: the face is apathetic, expressionless; extra-organic stimuli, as a rule, produce little or no evidence of reaction. The muscular rigidity on passive movement is usually well marked. In some instances all the muscles of the trunk and extremities are involved, while in others only certain groups seem to be affected. The rigidity may be more or less limited to the movements of flexion or extension; at times pronation and supination are also involved. Occasionally the face shows involvement, and in exceptional instances the muscles of mastication may become so rigid that the jaws are tightly closed. All passive movements, as a rule, awaken antagonism in the opposing muscles. In the catatonic contraction there is a marked hypertonia of the muscles. This may frequently be so intense that it is impossible to alter the position of the limb in a catatonic without using great force. The antagonistic action of muscles may be quickly recognized when the examiner attempts to flex or extend passively the limb of the patient. Observers differ essentially in regard to the specific importance of the symptom known as cerea flexibilitas. Some clinicians affirm that this condition may frequently be met with in the manic stupor of manic-depressive insanity as well as in other psychoses. Pain stimuli are usually not followed by an apparent reaction. The skin may be pricked with a needle or stimulated with a strong galvanic or faradic current without any evidences of sensation. The conduction of the nerves for electrical stimuli has been investigated, but the results so far obtained are conflicting. The patient makes few, if any, movements. Attempts at passive movements may evoke considerable rigidity. A patient will often keep his hands so tightly flexed, the finger-tips and nails pressing deeply into the palms of the hands, that it is necessary to forcibly open the hands and give him something to grip upon, in order to prevent maceration of the palms of the hands and fingers. Frequently the eyes are kept tightly closed, or again they are partly or wide open. The eyeballs may be touched without any evident reaction. During the continuance of this state external stimuli neither increase nor diminish the rapidity of the pulse nor the

rhythm of the respiration. But in spite of the presence of these symptoms the psychical functions are not completely inhibited. Days or weeks afterwards when the patient has emerged from this condition it is found that events that have occurred during this stuporous state are sometimes recalled in such detail as to show a remarkable degree of memory. The transition from this stage may be gradual or in some instances sudden. Occasionally a patient who has been in a deep stupor for weeks in a few hours becomes completely changed, is able to answer questions, to walk about the ward, and give a rational account of everything that is transpiring. It may be weeks, however, before the transformation is complete. In some cases the period of stupor is not well marked and the depression may be followed immediately by a maniacal condition. During this time the acts of the patient may suggest the frenzied state of epileptics. Every stimulus is unduly magnified and there seems to be no power of inhibition present. If given their liberty, the patients rush wildly about the wards, assaulting other patients, nurses, or whoever happens to come in their way, throwing themselves against the wall, on the floor, striking and breaking pieces of furniture, etc.

Hallucinations and *delusions* may be associated with the impulses. The patients see fantastic figures, devils, spirits. As a rule, they affirm that these phantoms are of a hostile character and are trying to injure or kill them. At times these delusions have a sexual basis. The patients affirm that evil spirits are trying to outrage them or that they are forced to do unclean things against their will. When interrogated as to their physical condition a whole chain of delusions suddenly springs into the foreground of consciousness. Any and all questions actively initiate and arouse anger. The physician is peremptorily told to get out of the room, and if the request is not at once complied with summary vengeance is threatened. On being left to himself the patient may at once become quiet, sitting down and relapsing into an apathetic state, but on the approach of any one he suddenly springs up again and becomes aggressively offensive. The excited catatonic patient is a source of

great danger to himself as well as those about him. The change from the state of apparent apathy to one of the wildest excitement is instantaneous. The duration of these periods of excitement, as well as of those of depression or stupor, vary greatly in duration. The paroxysms are characterized by greater impulsivity, more explosive emotional gusts, in which the acts are more unpremeditated and more inexplicable than those occurring during the motor excitement in the manic-depressive insanity. The actions as well as the speech of the excited catatonic are either monotonous and iterative or are startling, inapposite, and bear no relation to the incident stimuli. The tendency to harp on one theme, the inane jargon that is apparently not conditioned, nor deflected by extra-organic stimuli, is in marked contrast to the typical flightiness of the maniacal patient. The expressions used by catatonics are sometimes only senseless syllables, stereotyped expressions repeated, it may be, for hours at a time. If an attempt is made to deflect or to stop these babblings, the patients only shout the louder. During the excitement catatonics often refuse food. If unrestrained, they dash dishes on the floor, fling them across the ward, struggle violently while being fed, or tear their clothes to pieces. Certain individuals show only a limited motor excitability, while in others there is a general restlessness; they skip, hop, run, jump, and keep up an incessant motion, not infrequently carrying on these antics with a silly smile on their faces. They bump heedlessly into the furniture, shove any one out of the way who happens to be near, if they do not actually strike or kick him. Although considerable force may be coupled with these actions, the patients often are not deliberately aggressive and will not try to injure any one unless interfered with.

Psycho-anaesthesias are not uncommon. Some patients fling themselves about, caring little how or where they strike, and frequently inflict severe injuries upon themselves. Even these coarse, unpremeditated movements, as a rule, show some evidence of stereotypy. There is no marked incoördination, but the patients are decidedly clumsy, and any appearance of grace and ease is absent.

This form of the disease varies within wide limits. The degrees of intensity and duration of individual symptoms can not be foretold. The stuporous condition may last for months and the relative prominence of the mannerisms, ties, negativism, command automatism, is different in each case that comes under observation. The catatonic excitement may show occasional remissions or exacerbations, or may continue unchanged for months, or in extreme cases for even two or three years.

Paranoic Form.—This type of the disease is represented in part by cases in which catatonic symptoms first appear and are followed later by the development of fixed systematized insane ideas. These cases end, as do the other forms, in a terminal dementia. Many of them, until recently, were generally classified under paranoia. On account of the chronic and frequently stable character of the paranoic symptoms it is often impossible to make a diagnosis unless a complete history of the case is obtained. In the early stages periods of depression, of excitement, of stupor, and the characteristic catatonic motor disturbances—rigidity, negativism, stereotypy, and verbigeration—occur. Many observers in discussing the subject of paranoia attempt to distinguish between chronic simple paranoia and the hallucinatory form. If these paranoic states are carefully studied, symptoms characteristic of dementia præcox can frequently be noted at some time during their course. According to Weygandt[11] this group of cases, in which in the earlier stages hallucinations are a prominent symptom followed later by stable organized insane ideas, represents a definite clinical type of the disease. The hallucinations are frequently strange, fantastic, and seem to exert a remarkable influence over all volitional acts. One patient under observation in the hospital refused to work, as he affirmed that the birds in the trees talked to him and he was obliged to listen to what they said. He also told us that at times voices repeated things to him, generally of a pleasant character. Frequently hallucina-

[11] Weygandt: Op. cit.

tions and the insane ideas are combined in such a way as to give the picture of a well-ordered systematized persecutory paranoia. The patients affirm that they are being chased about by devils, receive electric shocks, are being communicated with by spirits; the room is full of invisible forms who are constantly harassing them. These ideas may persist for years, gradually becoming more foolish and absurd, and the disorganization of associated memory becomes more and more marked. Not infrequently hypochondriacal symptoms are present. When asked why they do not work, the patients affirm that they are unable to do so, that the heart has been displaced, that certain organs are wanting, that they lack the power to concentrate their attention. Sometimes they express a willingness to work, but contend that they are prevented from doing so by the action of spirits, devils, fiends. One patient for months at a time complained of stomach trouble. He would stand for hours kneading his abdomen and trying to belch up wind. Occasionally impulsive acts appear, at other times mannerisms; again the speech suggests the word hotch-potch or verbigeration, or the patients may show plainly command automatism. The auditory are more common than visual hallucinations, although the latter sometimes occur. Not infrequently olfactory hallucinations are present. Patients affirm that dead animals have purposely been left outside their door and that the unpleasant odors are a continual source of annoyance.

Another group of cases are those described by Kraepelin under the term *dementia paranoides*. Here the hallucinations are less in evidence, but the insane ideas of persecution and megalomania become more prominent. At times, early in the disease, the hallucinations have great sensory vividness, but this is soon lost and instead the chronic systematized delusions deficient in objective plainness occur. The delusions are protean in character. Sooner or later during the course of the disorder symptoms described as characteristic of dementia præcox are sure to appear. At times patients are so disputatious and querulous as to justify their classification among the cases of so-called litigious insanity. Again, it may be very difficult to

differentiate them from the true paranoics, and this can only be done when it is possible to obtain from competent observers a full history of the case. Instances are reported in which patients have been so specious and plausible in the statement of their supposed grounds for controversy and wrangling that the affairs have been carried to court. In the more pronounced cases there is marked dissociation of thought as well as impairment of volition and emotional apathy. The stories told by the precocious dements are, as a rule, illogical and lack the continuity of those of the paranoic. The patients sometimes give an account of the manner in which they have been ill-treated by their friends. Up to a certain point the tale is logical and to all intents and purposes truthful; then unexpectedly some unseen agency is introduced without rhyme or reason, and they confess that certain acts committed have been due to the admonitions of spirits or of departed souls. Occasionally the character of the megalomania is pathognomonic for this type of the disease. The same fantastic unreal elements enter into its composition. The patients affirm that they are in league with spirits, receive information from them; that they have the power of second sight; have communication with other worlds; that they are princes or princesses of the Pole Star. While affirming this in one breath they complain of their helplessness in another; that they are powerless and unable to help themselves.

Associated with the megalomania there is frequently a slight emotional depression. The hypochondriacal complaints are characterized by an apparent lack of emotional feeling. In some instances, as has already been said, the continuity and logical character of the insane ideas are well maintained, while in others the aid of mysticism, clairvoyance, spiritualism, and Christian Science is invoked to explain anomalies of thought and action. In these latter cases the ideas, as a rule, are more incoherent, and the strangest, weirdest, and most extravagant forms of speech are employed. These patients are excessively capricious, full of fads, crotchety, inconsistent, and erratic to an extreme degree. Their conduct is in a measure conditioned

by the insane ideas. Impulsivity is marked at times, at others there are frequent mannerisms and displays of arrogant egotism, ostentatiousness, and priggishness. The stereotypies vary greatly in character. Some individuals never leave the ward without walking along a certain line on the carpet. Others sit in one place, half automatically play games of cards—solitaire—for hours, shuffling the cards in the same stereotyped way, playing game after game correctly but in a mechanical manner, yet apparently taking little or no interest in what they are doing. Voluntary conversation is sometimes limited, at other times there is a tendency to be garrulous. The inability to divert and direct the patient's train of thought is singularly noticeable. These individuals become irresponsive to external stimuli although the primary sensations are exceedingly well preserved.

Dementia Paranoides.—Admitted to hospital December 15, 1896. Male, aged 34, single.

Family History.—Mother nervous. Rest of family history negative.

Personal History.—Early history of patient somewhat indefinite. Although said to have been unusually bright at school and college and always ranking well in his favorite studies, he showed no aptitude for others. Was a close and hard-working student. Manner diffident, disposition retiring. While abroad in 1892 he broke down from overwork and was in a hospital for some time undergoing treatment. Was brought home in 1894. While living at home he worked for some time in a desultory way, was very reticent, secluded himself from others, was inclined to take violent dislikes towards members of his family, but was never violent. Became suspicious of his friends without cause and refused to be controlled. Came to the hospital willingly when told he had been committed. Upon admission he was quiet and reticent, answered questions in monosyllables, but quite coherently, and said he would remain quietly here.

Physical Condition.—Spare in flesh. Movements nervous and awkward, head ill-shapen, forehead flat. Complained of dyspepsia of intestinal type. Remained in hospital until January 10, 1896, when he was discharged and left for home. During stay at home he was diffident and seclusive, ate and slept fairly well, improved somewhat in weight and strength. Several attempts were made to employ him, but he showed no power of attention.

Readmitted December 15, 1896. Condition about the same as when in hospital, except he had gained somewhat in flesh and strength. During 1897 his general condition remained the same. Returned to the hospital and was allowed to go home for a day or two at a time. Expressed the delusion that a battery was being worked on him. Once he left the dinner-table very

suddenly, tipping over his chair in doing so. When asked why he had done so, he said that a galvanic battery had been applied to him and that the doctors knew all about it. Occasionally was somewhat agitated and markedly disconcerted and often asked to be allowed to go home. At other times would sit for long periods staring vacantly into space. Ate and slept well. Would read newspapers and medical journals to some extent, but gradually lost interest. At one time he helped with the urinary analyses in the laboratory, but was erratic in the work and not to be depended upon. During 1898 kept a great deal to his room, came late to meals, was easily disturbed by the noises in the adjoining room, moved away from people because he thought "they wish to say things they do not want me to hear." Swore considerably, sometimes at the doctor. Always late in going out for exercise, irritable, seldom smoked. He thought the nurses were trained to keep food away from him. Tiptoed around in a suspicious manner; thought he heard noises coming from the register and these frightened him. Complained of chirping of birds and kept his window closed. Was apt to wander from the walking-party "to look for bones of dead animals." One day he suddenly became impulsive, and without provocation threw a cup at a nurse. Very slow in dressing. Would pick up his collar and shirt and blow them off as if trying to get them clean.

In 1901 he exhibited the following peculiarities: Excessive washing of hands. Would bathe from one to two hours. His manner and position were decidedly awkward. Would not look at observer straight in the eye, simply glanced at him and then immediately looked away as if embarrassed. Replied to questions put to him in as few words as possible. Did not volunteer any information. Objected to examination on the grounds that this procedure, as conducted by the doctors, was unfair and that the information thus obtained might be used to identify him if he escaped. He said the doctors maligned him and made fun of his gait and other peculiarities. Very suspicious and thought that people were trying to injure him and accounted in this way for his confinement in the institution.

Physical Examination.—No defect in speech. Thorax shows nothing remarkably abnormal. Reflexes slightly exaggerated. Memory for past events accurate and correct. Mental reactions quick. Patient has an exaggerated sense of modesty. Orientation normal. Has a number of auditory delusions.

December, 1904. The mental reduction is gradually becoming more pronounced.

The So-called Lucid Intervals and Terminal Stage.—A great many of the cases of dementia præcox end in a specifically characteristic dementia, in which the emotional anomalies and intellectual impairment give color to the clinical picture. The limitation and inhibition of volitional acts are also marked. Sense perception, as a rule, is singularly well preserved. Mannerisms, stereotypies of thought and act, impulsivity, negativ-

ism, command automatism, stuporous and cataleptic states, may persist during the dementia and recur at varying intervals with a greater or lesser degree of severity. All forms of the disease may end in the severer grades of dementia, nor are there any known signs by which in any given case the degree of severity can be foretold. In a general way, however, it may be said that the paranoiic forms are less liable to show an abatement in the intensity of the symptoms than are the hebephrenic or catatonic types. No instances on record can be adduced to prove conclusively that there is ever a *restitutio ad integrum* after the disease has developed far enough to permit an accurate diagnosis to be made.[18] In the lowest classes of society the permanent defects in the volitional, emotional, and intellectual spheres may escape notice owing to failure to recognize them as distinct from mere idiosyncrasies the result of the low social status of the individual. According to Kraepelin 8 per cent. of the heboid and hebephrenic and 13 per cent. of the catatonic patients recover sufficiently to resume their ordinary occupations at home. It is always possible, however, to demonstrate in these individuals residuary psychical defects. Meyer,[19] basing his observation on the study of 46 cases of catatonia admitted to the Tübingen clinic, affirms that the prognosis is relatively more favorable in the cases where the onset is sudden and the stupor an early symptom than it is when the disease begins more gradually and the stereotypies are pronounced.

This phase is in contrast to the retained intellectuality in the lucid intervals of many, but not all, of the cases of manic-depressive insanity. The periods of improvement frequently recorded during an attack of dementia præcox may be interrupted at any time by an acute exacerbation of the disease.

The *physical symptoms* of dementia præcox are multiform, but individually none is specifically characteristic. A muddy complexion is frequently noted in patients in whom mental

[18] A contrary opinion has recently been entertained by Karl Kahlbaum. Monatschr. f. Psych. u. Neurol., Bd. xii, Juli, 1902, Heft 1, S. 58.

[19] Meyer, E.: Zur prognostischen Bedeutung der katatonischen Erscheinungen. Münch. med. Wchnschr., 1903, Nr. 32.

depression is a prominent symptom and acne vulgaris is quite common. In the more chronic cases the sufferers have a peculiar pasty appearance, the features not infrequently suggesting the changes which occur in myxœdema. Sometimes the patients look younger than they really are, but this expression would strike the careful observer as not due to the preservation of functions seen in normal individuals, but rather as suggesting the juvenile appearance of one whose mental development has lagged behind. In one patient that came under observation during the attack of depression which preceded the excitement there was a marked acneiform eruption limited to the forehead. This was associated with gastro-intestinal disturbances, and persisted through the period of depression, but passed away before the end of each maniacal outbreak.

Vasomotor disturbances are common. There may be marked dermatographia. The skin is apt to be dry or it may have a greasy appearance. At times there may be a tremor of the tongue and extremities, and a weakness and temporary spastic condition of the latter have been described in some cases. Not uncommonly there is a marked increase in the mechanical irritability of the muscles supplied by the facial nerve. Tapping over this region elicits a short, sharp, quick contraction, and this hyper-excitability sometimes involves not only the muscles directly stimulated, but also those on one side of the face. The eyes at times are affected with cramp-like contractions of the muscles which suggest a nystagmus. The pupils in the early stages react immoderately to light; not infrequently a hippus is present. The tendon reflexes are frequently very active, in some cases exaggerated. At times a slight ankle clonus may be present. There may be cyanosis, profuse salivation, and sweating. The rate of the pulse is sometimes quickened, particularly during the excited periods, and the blood-pressure may be low, as is usually seen in cases where the motor restlessness is excessive. Abnormally low temperatures have been reported, especially during the period of depression. An increase of temperature, if it persists for any length of time, should at once

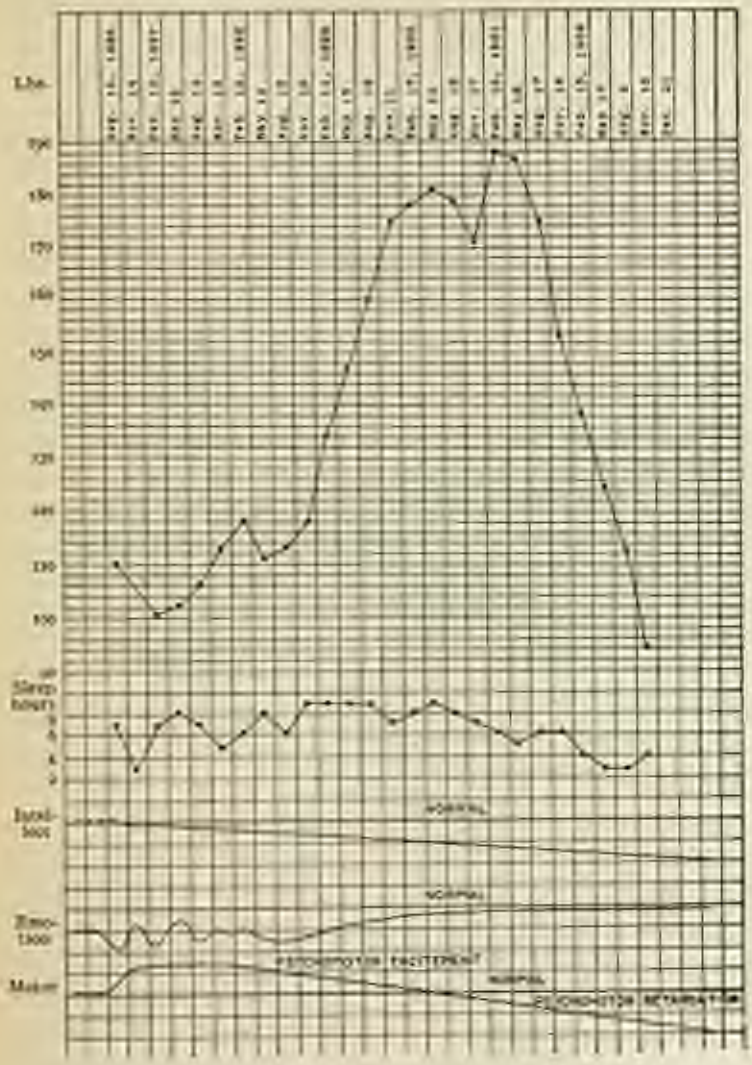


Chart to illustrate course of case of dementia præcox. The chart shows characteristic gain and loss of weight, average hours of sleep, and schematically indicates the changes in the intellectual, emotional, and motor spheres. The patient died December 21, 1911.

arouse suspicions of tuberculosis, a disease to which these patients are very prone (Kiernan). In the acute cases the bodily weight not infrequently falls rapidly below the normal. In the more chronic, particularly in the hebephrenic type of the disease, the patients may become quite plump and fat.

Etiology.—The hereditary factor would appear to be of great importance in the genesis of this disease. Some observers have noted evidences of alienation in the progenitors in at least 75 per cent. of their cases and were able to show that the disease was endogenous in many families; Bianchini[20] found that hereditary predisposition was present in nearly all of his cases. Mucha affirms that among the ascendants the disease was of such a type that the account of the symptoms given was sufficiently definite to justify the diagnosis of dementia præcox. Confinement in an institution was not considered essential for proving the existence of some degree of this form of mental aberration. Thus the father, mother, brother, or sisters were found to have exhibited abnormal mental characteristics, such as apathy, a singular lack of initiative, combined with the occurrence of mannerisms, stereotypies, etc. Barr[21] affirms that "only he who is predoomed can acquire the disease."

Apart from the hereditary basis the environment of the patient is of the greatest importance. Rapid change in the social condition of families is unquestionably a factor of great etiological importance. The children of families who were formerly poor and have suddenly come into the possession of wealth are particularly prone to fall victims to this malady. The same is equally true of individuals who have been accustomed to a quiet country life and then have moved to large cities, where they have been suddenly subjected to new and entirely altered surroundings. In the discussion of catatonia Kahlbaum called attention to the fact that the disease was particularly apt to

[20] Sull eta comparsa e sull' influenza dell' ereditarietà nella patogenesi della demenza primitiva o precoce. Riv. sperim. di Freniatria, vol. xxix, fasc. 3, 1903.

[21] Barr, Charles W.: University of Pennsylvania Med. Bull., March, 1903.

break out in the families of those who were engaged in certain professions or trades, and affirmed that ministers, teachers, and their children were particularly liable to suffer from this disease. Its frequency in other professions has also been noted; and, in fact, any occupation which gives rise to conditions which lower the physical activities of the individual while unduly stimulating the functions of the central nervous system is preparing the soil for this form of alienation. According to Bianchini and other observers the mental and physical development of those afflicted with the disease prior to the outbreak of the malady, except the catatonic form, has been normal. All physical disorders which cause a profound anæmia, disorders of digestion, and those occupations which cut the patient off entirely from exercise in the fresh air, long periods of work uninterrupted by holidays, trauma, excesses of various kinds, infectious diseases, particularly influenza, may become the starting-point of this disease. As far as we know there does not seem to be any great difference in the frequency with which the malady affects the two sexes. Instances of this form of mental aberration are said to have followed certain surgical operations.[23] But although this statement can not be categorically denied, the present evidence upon which it rests is too limited to warrant its acceptance. That operative interference has merely precipitated an attack of catatonia must first be positively excluded before it is possible to affirm that catatonic symptoms are the direct result of injuries inflicted upon the central nervous system.

The differential diagnosis[24] when the disease is well developed is not particularly difficult, especially if stereotypies, mannerisms, verbigeration, and negativism are present. In the early stages, however, it is often impossible to make a positive diagnosis of dementia præcox until the patient has been under observation for some time. At first the protean forms of

[23] Boshöffer, K.: Ueber ein eigenartiges operativ beseitigtes katatonisches Zustandsbild. Centralbl. f. Nervenheilk. u. Psych., Nr. 156, Januar, 1903.

[24] Pritchard, W. H.: Observations on Dementia Præcox. Cleveland Med. Journ., January, 1904, p. 18.

neurasthenia have to be considered. The occurrence of impulsive acts, mental depression with slight apathy, slow psychical reaction, the appearance of mannerisms and the like, however, render it probable that the case is one of dementia præcox and not a purely functional disorder. Not infrequently hysterical symptoms complicate the question and increase the difficulties in diagnosis, since they often are met with during the early stages of dementia præcox. Occasionally we have to do with the so-called *hysterical insanity*, but it must always be remembered that this form of alienation is comparatively rare and many of the cases formerly classed under this head are now known to be dementia præcox. Hysterical symptoms do not necessarily mean an hysterical insanity.

The initial stages of *manic-depressive insanity* and dementia præcox frequently have many symptoms in common. The motor restlessness of the former presents essential differences that distinguish it from the quixotic, volcanic, emotional explosions of the precocious dement. In the latter group of cases the acts seem to be the result of an inexplicable impulsivity. The motor agitation is not so constant; there are moments of quiet and apathy. The patients, if they talk at all, give expression to their ideas in a bizarre, grotesque manner. Frequently the hotch-potch of words is apparent. In the maniacal cases, on the other hand, there is the typical flight of ideas characterized by an uninterrupted flow of language. The train of thought deviates rapidly in response to various stimuli. In the dementing cases the dissociation is the prominent feature in the anomalous physical state. The typical flight of ideas is absent, although there may be the stereotyped repetition of certain words and phrases. Another essential difference is that in the maniacal cases the emotional no less than the intellectual state is in a measure determined by the patient's environment. Maniacal patients see something that pleases them or arouses their suspicions, and the appropriate emotional tone and the corresponding objective expression of the same are instantaneously reflected in thought and act.

In the dements there is an apparent incongruity or dis-

sociation between the expression of the mood and the incident stimulus; the emotional change is frequently foolish, purposeless, silly. One is never quite sure how these cases will respond to stimuli. In those afflicted with manic-depressive insanity the physician is frequently able to say in advance what effect a given stimulus will have.

The differentiation from *paresis* is sometimes difficult, particularly in the juvenile forms of the disease. The speech and action of the paretic may at times become decidedly stereotyped, but never to the same degree commonly noticed in cases of dementia præcox. The condition of the pupils, the diminution in the reaction for light, the involvement of the cranial nerves, and the speech disturbances are important diagnostic signs of paresis. During the course of *epileptic mania* we frequently meet with impulsive acts associated with great violence. The disorientation of the epileptic is more apt to be complete. The precocious dement, on the other hand, frequently retains a fairly accurate knowledge of his environment and identity. Meyer[24] affirms that the appearance of catatonic symptoms, while unfavorable, does not necessarily imply that the case is absolutely incurable, as in his experience from 20 to 25 per cent. of his patients who have shown these symptoms after a considerable period of time have completely recovered. The hereditary factor is an important element in at least 54 per cent. of all cases. The period of depression in the dementing cases may be distinguished from the *senile melancholias* by the occurrence of stereotypies, negativism, etc. This psychosis is, as a rule, distinguished from *amentia* by the more sudden onset of the latter, the history of a period of marked physical exhaustion, the number as well as the dominating force of hallucinations and illusions, and the marked disturbance in the perceptive processes as well as in orientation. The differential diagnosis, however, between this disorder and other subacute deliriums or confusional states, such as amentia, is fre-

[24] Zur prognostisch. Bedeut. der katatonisch. Erscheis. Münch. med. Wchnschr., 1903, Nr. 32.

quently one of the most difficult that the alienist is called upon to make. There is little doubt that isolated catatonic symptoms, such as verbigeration, cerea flexibilitas, and impulsivity are not infrequently observed in the latter condition. We are inclined to agree with Stransky [24] that amentia is not as uncommon a disease as the Heidelberg statistics seem to indicate, it having been met with only six times in 1500 cases. In two instances which within the past year have fallen under our observation the patients although showing catatonic symptoms ultimately recovered, and after a careful examination no residual mental defect was noted. From these and similar observations we are led to believe that the occurrence of isolated catatonic symptoms does not necessarily imply the existence of dementia præcox.

The juvenile cases of dementia præcox bear a striking similarity to cases of *imbecility*. The diagnosis depends upon the history of the patient and the occurrence of those symptoms to which reference has so frequently been made. The difficulties are increased in cases in which the dementia seems to be engrafted upon a preëxisting state of feeble-mindedness.

Some clinicians have attempted to establish the identity of the pathological processes concerned in the production of imbecility and certain cases of dementia præcox. This error depends in a measure upon the failure to recognize the fact that dementia præcox not infrequently occurs at a comparatively early period of life. These juvenile cases dement rapidly and give rise to a chronic state which presents many of the symptoms common to imbeciles. The greatest difficulty in diagnosis is sometimes met with in the more protracted cases. As Jahrmärker [25] has pointed out, there is need for a more careful study of the type of cases now grouped under the head of dementia paranoides. Only after the lapse of months, or it may be of years, is it possible to determine whether the disease in question

[24] Stransky, Erwin: Zur Lehre von der Dementia Præcox. Centralbl. f. Nervenheilk. u. Psych., 1904, Januar, xvii. Jahrg., N. F., Bd. xv.

[25] Jahrmärker, Max: Zur Frage der Dementia Præcox. Eine Studie. Verlag von Carl Marhold. Halle a/S., 1903.

should be grouped under the head of paranoia or whether there are any symptoms which suggest catatonic dementia. In regard to these cases it must also be kept in mind that a paranoiic state does not warrant the diagnosis of paranoia.

The occurrence of isolated catatonic symptoms during the course of other psychoses has been frequently observed. Jahrmärker [2] has noted them in dementia paralytica and reference has already been made to their appearance in amentia. In one case that came under observation the patient presented a typical series of catatonic symptoms and in addition Argyll-Robertson pupils, absence of the patellar tendon-reflex, characteristic paretic disturbances of speech, and a definite history of luetic infection were noted. Such a combination of symptoms, however, naturally suggests the possibility of a complication. In the majority of cases with diminished reflexes, unequal pupils, and a sluggish reflex for light we are justified in assuming the presence of two distinct disease processes. Although it may be admitted that isolated catatonic symptoms occur during the course of other psychoses, this does not justify the assumption that the simultaneous or consecutive appearance of several of these symptoms is not specific of catatonia. As far as we are able to judge, there is no reason for believing that the catatonic form of dementia præcox may not complicate other forms of insanity. If this be true, the catatonic symptoms are not an integral part of the clinical picture of other forms of alienation. The nervous manifestations which are in a measure characteristic of the earlier cases of catatonia are increased tendon-reflexes and sometimes widely dilated pupils.

Pathology.—The pathological changes noted at autopsy in the internal viscera of patients who have died during an attack of dementia præcox are, as a rule, extensive, but neither individually nor collectively are they specific. Kiernan was the first observer to call attention to the fact that cases of catatonia are very apt to have tuberculous infections.

Dunton, as a result of his very careful studies, reports that

[2] Op. cit.

there is a general but not excessive series of alterations in the neural elements. The nerve-cells show slight central chromolysis, more marked, as a rule, in the deeper layers of the cortex. Some of the nuclei are swollen and there is a folding of the nuclear membrane. Pale yellowish pigment in greater amount than occurs in the nerve-cells of individuals of a similar age and who have not suffered from alienation is found. These changes are also noted in the nerve-cells of the basal ganglia. Dunton [28] expresses himself very conservatively in regard to the supposed diminution in the number of nerve-cells in the cortex. In some instances there is an increase in the number of neuroglia cells which also occasionally give evidence of mitotic division (Alzheimer). Neurophagocytosis is fairly well marked. In one case Dunton observed "decrease in the number of Purkinje cells, and those present were distorted, atrophied, and showed the condition described as ghost cells." The vascular changes, if they exist at all, are unimportant. The membranes are normal. The hypophysis is not increased in size.[29]

Zacher in a case of chronic paranoia terminating in dementia reported a moderate degree of disappearance of the medullated fibres in the cerebral cortex. Analogous conditions were found by Cramer in two cases. In the first case the dementing process followed melancholia and in the second a chronic paranoia.

Alzheimer maintains that the glia changes are in a measure specific and that the severity of the symptoms is in a measure proportional to the extent of the changes in these elements. The intensity of the lesions in the nerve-cells runs parallel with the changes in the neuroglia elements. Vogt has reported the pathological findings in five cases of dementia præcox and catatonia. In one case the cell changes were scarcely noticeable, but in the others the chronic cell change was well marked.

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[28] Report of a second case of dementia præcox with autopsy. The Am. Journ. Insan., 1904, lx, No. 4.

[29] Dunton, William Rush, Jr.: Medical Reports of the Sheppard and Enoch Pratt Hospital, 1903, vol. i, No. 1.

There was an increase of the glia throughout the outer cortical layer as well as about the vessels. In one of the cases the vessel wall was somewhat thickened. In the adventitia there was a diminution of the nuclei and a considerable amount of pigmentation. Practically the same conditions have been reported by others. The investigations of Dunton in this country have added materially to the importance of the above-mentioned findings by confirming these observations in cases in which careful detailed histories were given. The clinical histories, as well as the general pathological findings, all tend to support the hypothesis that the disease, at least in its incipiency, is an autointoxication.

Bernstein [20] has recently emphasized certain facts in the clinical picture which seem to tend to strengthen this view. On account of the increased mechanical irritability of the muscles in the catatonic state he infers that the hypertonia is due in part to the action of certain toxic agents upon the neural elements in the central nervous system. The muscular phenomenon is looked upon as purely psychomotor. So characteristic are these motor symptoms supposed to be that the name of dementia paratonita progressiva or paratonia progressiva has been suggested as preferable to dementia præcox.

Patini and Madia [21] as a result of their investigations conclude that the catatonic symptom-complex is the product of an abnormal psychosensitic state appearing episodically and standing in more or less definite genetic relationship to the stupor. According to the same view the catatonic condition has many points in common with provoked catalepsy as well as with the phenomena noted in somnambulism. The three conditions of catatonia, catalepsy, and somnambulism indicate a lowering of certain functions of the brain with an over-activity of others, and as a result of this there are a disequilibration and a dissociation of the cerebral activity.

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[20] Bernstein, Alexander: Ueber die Dementia Præcox. Allg. Zeitschr. f. Psych. und psych.-gerichtl. Medicin. Bd. lx. Heft 4. Berlin, 1903.

[21] Annali di Nevrologia, 1903, anno xxi, fasc. v, vi.

Treatment.—When the diagnosis of dementia præcox is established the afflicted individual, if possible, should be transferred to a hospital for the insane so as to be for a time under constant medical supervision. The symptoms should be studied with a view to determining the degree of liberty that may with safety be given to the sufferer. In the milder forms of the disease there is sufficient intellectuality left to render it possible for him to be employed, preferably out-of-doors in work about a farm or garden. Hard physical exercise in the fresh air seems to lessen the tendency to impulsivity and acute exacerbations of the disease. These mild forms of the disease are peculiarly well adapted for treatment in the colony system. The severer types are best off either in a hospital or an asylum where they can be carefully watched. The treatment of the symptoms, as they arise, is purely symptomatic. As this form of alienation is very common according to some observers, exclusive of idiocy and imbecility, making up about one-fifth to one-sixth of the cases admitted to hospitals for the insane (although this is probably much too high a figure), it is desirable that the characteristic symptoms should be recognized as early as possible by the general practitioner. A comparatively large number of cases are to be found among the children in the public schools. The tendency to emotional outbreaks, intellectual impairment, looseness in morals, should be sufficient reasons for the immediate removal of these children from contact with others.

CHAPTER XV

THE DEMENTIA PARALYTICA GROUP. (PARESIS. PROGRESSIVE GENERAL PARALYSIS OF THE INSANE)[1]

Except for occasional remissions this disorder is characterized by a group of mental and physical symptoms which tend to become more and more aggravated until a peculiarly characteristic dementia supervenes, to be followed by death after a period varying from one to ten or more years from the onset. The psychic anomalies are the result of a more or less general progressive paralysis of the cortical functions combined with occasional evidences of focal lesions. Pathological changes in the brain, medulla, spinal cord, peripheral nerves, and sympathetic system are common and frequently extensive, but the totality of these alterations is alone distinctive. The beginnings of our knowledge regarding dementia paralytica are supposed to date back to the time of Thomas Willis, although in all probability the earliest authentic descriptions are those of Haslam in 1798. The characteristic speech disturbance was first noted by Esquirol, but the first definite attempt to differentiate dementia paralytica as a disease entity was made by Bayle in 1822, and the first monograph upon this subject was written by Calmeil in 1826. Since that time, both in the clinic and laboratory, a large body of investigators have added materially to our knowledge of this disease, so that at present it has probably been the subject of more extended study than any other form of alienation. For the sake of clearness brief mention will first be made of the various individual symptoms, but the discussion of their

[1] V. Krafft-Ebing: Die Progressive allgemeine Paralyse. Holder, Wien, 1894. Bannister, H. M.: Reference Handbook of the Medical Sciences, vol. v. New York, 1902. Dupré, E.: Paralysie Générale Progressive. In Ballet's Traité de Pathologie Mentale. Paris, 1903, pp. 884–1027.

relative importance and the different ways in which they are apt to occur will be reserved until we come to deal more in detail with the course of the disease.

Although the clinical symptoms of general paresis which have attracted the most attention are those developing in connection with lesions in the central nervous system, clinicians are gradually becoming convinced that more care should be bestowed upon the study of disturbances referable to disorders in the internal viscera even in the earliest stage of the disease. The clinical picture is the result of a chronic progressive change in the nerve-elements, and although this deterioration may on superficial examination seem to be more marked in some one part of the nervous system, the disease process, as a rule, is not localized, so that symptoms suggesting focal lesions are most commonly to be regarded as the result of complications. The malady progressively affects the whole psychic life of the individual, but its onset may be most insidious. During its course anomalous emotional states characterized by excitement, depression, or apathy may appear with accompanying hallucina-

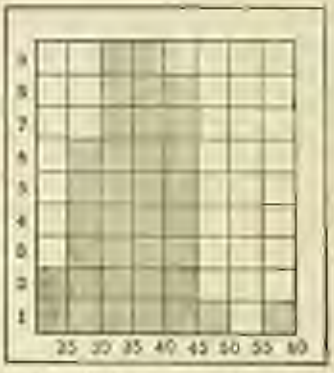


Chart I. General paralysis in women. 91 cases. (After Pilcher.)
The figures at the bottom represent the ages; those at the side the number of cases.

tions and delusions, but later on there develops, more or less rapidly, a terminal dementia with a specific stamp and distinctive physical manifestations.

Incidence and Etiology.[1]—In the great majority of cases the disease makes its appearance in the third and fourth decades of life at the time when the intellectual faculties are

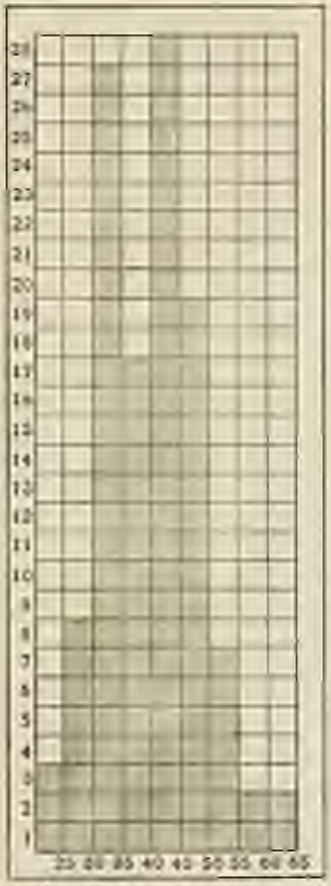


Chart 11. General paralysis in men. 113 cases. (After Pickett.)
The figures at the bottom represent the ages; those at the side the number of cases.

supposed to be at their highest stage of development and the individual is subjected to the greatest stress and strain of life. Undoubted cases occurring as early as the first or second and as

[1] Die Aetiologie der progress. Paralyse. Riecke. Psychiat. Neurol. Wchnschr., 1904. Nr. 43.

late as the fifth or sixth decades are on record, but are relatively rare. In the so-called infantile type of the disease hereditary syphilis is apparently the chief factor and boys and girls are about equally affected, but during adult life it is six or seven times more common in men than in women.[1] Undoubtedly the disease is now recognized more frequently in women than formerly, but it is probable that, owing to the marked variations presented in the disorder as it affects females and the rare occurrence of a marked euphoria, its true nature was not infrequently overlooked. V. Kiss[2] gives the incidence in women as compared with men as 1 : 30.3, while Ringe[3] found it much more frequent, 1 : 5.6.

As regards the *etiology* of paresis in general two antithetical views are entertained, some authorities holding that syphilis is the sole cause of nearly all the cases, while others minimize the significance of this factor and assume that in at least half of the cases the hereditary predisposition is all-important. In any case the latter should never be underestimated. Näcke[4] has referred to the frequency with which stigmata of degeneration are observed. The general consensus of opinion favors the view that the family history indicates the existence of nervous or mental trouble in the ancestors in at least 45 per cent. of all cases. According to Ziehen signs of degeneracy, while more common in paretics than in the sane, are less frequently met with in this malady than in other forms of alienation. Other observers have called attention to the relative infrequency with which degenerates are afflicted with paresis. The occurrence of the disease in the descendants of those who have suffered from paresis is not infrequently reported, although they are more particularly apt to suffer from various functional disturbances of the nervous system.

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[1] Hoch, August: General Paralysis in Twin Sisters. Journ. Nervous and Mental Disease, 1896.

[2] Orvosi Hetilap., 1904, No. 7.

[3] Idem., 1903, No. 45.

[4] Die sogenannten äusseren Degenerationszeichen bei der p. P. der Männer. Allg. Zeschr. f. Psych., Feb., 1899.

such as impaired development, alcoholism, epilepsy, etc.[7] Since the observations of Esmarch and Jensen[8] it is obvious that in the great majority of cases *syphilis* is an important etiological factor, but it is impossible to substantiate the view that all others are necessarily of secondary importance. The statistics upon this point vary considerably. Gudden maintained that there was a definite luetic history in 35.7 per cent., Hirsch in 56 per cent., Jolly in 69 per cent., Mendel in 75 per cent., and Alzheimer in 90 per cent. of the paretics examined; nor is it at all improbable that in a varying proportion of the remaining cases it may play an important rôle, although it is impossible to either affirm or deny its existence. Between the initial sore and the outbreak of dementia paralytica a long period may intervene—on an average from ten to fifteen years. Hirschl gives the extreme limits at from two to thirty and v. Kiss at from one to thirty-two years. It is, furthermore, important to bear in mind the fact that in many cases it is impossible to say that the patient has not previously suffered from syphilis, although there may be complete absence of positive evidences of a specific infection. Some alienists affirm that neither a neuropathic predisposition nor the syphilitic infection is sufficient to account for all the symptoms that develop in the course of general paresis.[9] The observations of Scheube[10] are of considerable importance as showing the relative frequency of syphilis as an etiologic factor. From all the available data it is obvious that paresis is relatively rare in tropical and subtropical countries and among half-civilized peoples, whereas syphilis is very common. In Abyssinia Holzinger was unable to discover a single case of paresis among 12,000 cases of syphilis. Rothschuh

[7] Vallon et Wahl: La famille des paralytiques généraux. Congrès de Paris, 1900. Arnauld: La descendance des paralytiques généraux. Soc. méd.-psych., 1899.

[8] Syphilis u. Geisteskrankheit. Ztschr. f. Psych., Bd. xix, S. 20.

[9] Coulon, E.: Nature et pathogénie de la paralysie générale. Revue de Psych., 1902, Nr. 10. Hurd: Etiology of Paresis. Am. Journ. Insan., vol. lvii, No. 4.

[10] Scheube, R.: Die seuchenhaften Krankheiten in den warmen Ländern. Arch. f. Schiffs und Tropen Hygiene, 1902, Bd. vi, Nr. 5-7.

did not meet with any case of the disease among the Nicaraguans, although it was estimated that at least 70 per cent. of the men and 50 per cent. of the women were syphilitic. Similar conditions are said to exist in Cashmere, Siam, Algiers, Egypt, Southern California, and Brazil. The same is true in regard to the negroes in countries where syphilis is common and general paresis a great rarity. Berkley [11] and Tschisch [12] maintain that progressive paralysis is merely a late form of syphilis and that if hereditary lues is taken into account this factor covers the whole field of the etiology. In other alienations it is estimated that lues is an etiological factor in from 12 per cent. to 18 per cent. of all the cases.

Instances are occasionally reported of a so-called conjugal paresis.[13]

Chronic alcoholism is a factor of considerable etiologic significance and is probably present in at least 10 or 15 per cent. of all the cases that come under observation, although some authors think it occurs much more frequently. Care must be taken, however, to distinguish between the drink habit which develops as a result of the disease from that form of overindulgence which precedes and is essentially of primary causal importance.

Trauma is supposed by some to be solely responsible in a very few cases for the development of dementia paralytica, but although it may properly be regarded as an occasional exciting agent, it is not in any sense the only one. A majority of the cases preceded by trauma seem to develop into the simple demenling type of the disease.

The importance of *fatigue* as a provocative agent in the genesis of the disease has been repeatedly pointed out, but there

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[11] Berkley, Henry J.: A Treatise on Mental Diseases. D. Appleton & Co., 1906.

[12] Tschisch, W.: Definition of Progressive Paralysis; its differentiation from similar forms of disease. The Journ. of Mental Pathology, July, 1902.

[13] Ferenczi, A.: Budapester königl. Aerzte-Gesellschaft, Bd. xvi, 1903. Cullerre, A.: Arch. de neurol., 1904, Février.

are some observers who seriously question this position and maintain that this factor alone, uncomplicated by other contingencies, never gives rise to symptoms that are suggestive of general paresis.

Intoxication has been reckoned of considerable etiologic importance, Regis and others holding that it first gives rise to a toxæmia, which process is the starting-point of the disease. The influence of chronic *lead poisoning* has long been recognized, but it must always be borne in mind that many of the cases reported as instances of paresis are in reality not to be distinguished from Korsakow's psychosis. In Italy pellagra has often been known to precede paresis. As a rule, the *social position* and *daily life* of the individual are not without influence. The disease is uncommon in those who are able to lead a regular, orderly life, but is very frequent among soldiers, travellers, journalists, physicians, and those whose manner of life is more or less irregular. Paresis is particularly apt to develop among men in the higher classes of society, although women in the same grade are singularly exempt. Any severe disease which lowers the vitality of the individual may be the exciting cause. Recently English observers have maintained that gastro-intestinal disturbances play an important rôle in the development of the disease.[14] The statement of Bruce and Robertson that the disease is an intoxication caused by bacterial toxins as yet can not be substantiated, and there is little evidence to warrant the belief that B. coli is an important etiological factor. Bruce's theory that the normal blood-serum causes an agglutination of B. coli more readily than does the serum of the paretic has not yet been generally substantiated.

The sweeping condemnations sometimes put forth by certain writers against the evils of modern civilization and their supposed relation to the marked increase in the number of paretics are, in view of the paucity of facts, of little scientific value. The more general recognition of the disease by the

[14] Reimann, E.: Zur Aetiologie der progressiven Paralyse. Wien. klin. Wchnschr., 1903, Nr. 13.

medical profession is a potent factor in bringing about this apparent, but not necessarily actual, increase in the spread of the disease.

Mental Symptoms.—The cardinal defects in the mental functions that appear early in the disease and in nearly all cases form the basis upon which the more complicated psychic anomalies develop are: (1) disturbances in the power of attention; (2) amnesias; (3) defects in the associative processes largely shown in the inability of the individual to form mental syntheses; (4) changes in sensibility and in the so-called organic sensations.

(1) The inability to direct the attention may be the very first symptom of the disease. At first the patient may be conscious of this abnormality and lament the fact that he is unable to keep his thoughts focussed upon any one subject. His mind wanders, and every attempt to focus for any length of time upon one object or subject is accompanied by an abnormal sense of effort. The more intellectual the individual the sooner does this defect become apparent. The business man finds that he is unable to conduct his own affairs or to concentrate his energies upon the accomplishment of a single aim, inasmuch as he is disturbed by the constant influx of new stimuli to such an extent that he soon loses track of the goal towards which he has set out. This distractibility can be readily demonstrated by various simple tests. For example, if the patient is asked to add up a long column of figures, it not infrequently happens that before the addition is completed the attention is deflected from the problem either by the cropping into consciousness of some new idea or by some external stimulus.

(2) As a result of this defect in the attention the memory early shows signs of being seriously disturbed. These amnesic defects become apparent in many ways. Thus individuals who in both conversation and writing have before had command of a large and varied vocabulary become greatly restricted in their use of words, and for this reason may complain that it is a great effort for them to express themselves. These disturbances in composition, to which more detailed reference will be

made later on, closely resemble those seen in conditions of great physical fatigue, and it is only when they are associated with other symptoms that they become of diagnostic importance. On account of the great distractibility of the individual, new impressions are evanescent and are seldom retained. The more complicated the process necessary for the re-collection and re-development of sensory images the more readily does the dissociation become evident. Such individuals frequently retain a fairly accurate knowledge of events that have occurred in their past life, while the present is more or less of a blank. The memory for faces seen only once or twice is generally soon blotted out. In the very earliest stages patients are often greatly distressed by this defect, since they realize that it unfits them for the successful performance of their ordinary duties. The lapses of memory, as a rule, are progressive, and it is not rare to find patients who forget the street in which they live or are unable to recall the names of the various members of their own family. Although in the earlier stages the patient generally retains some idea as to the importance of these defects, and either tries to conceal them or in some way or other to divert the attention of the observer, later on the consciousness of their existence is much less likely to awaken a very great degree of emotional disturbance.

Aphasic symptoms may intervene but are indicative of complications, such as hemorrhage, softening, etc. The memory defect is more or less general, involving not only the visual images but also including sounds. The memory for events also suffers, and frequently the patient is unable to give any connected account of what he has done on the preceding day or even in the past hour. In spite of the great defect in recent memories there is often a remarkable recollection of events that have occurred in the remote past.

(3) As would naturally be expected, time and space orientation are also seriously interfered with, so that patients find themselves unable to recall the year, month, and day of the week, and may be equally unoriented as to their environment. At first such individuals may complain that their

surroundings seem strange to them, but cannot give any definite idea of just how they have changed except that persons no less than familiar objects look unnatural. Gradually these symptoms increase in intensity until orientation is completely destroyed and the patients fail to recognize where they are, have no recollection of their places of business, do not remember being brought to the hospital, etc. In addition, all the memories necessary for the preservation of the personal identity are apt to be lost. In the terminal stages associative thought is so completely disorganized that even the memories of events long past are more or less completely obliterated. These anomalies in the connection of ideas appear early in the disease, and, as has been said before, there is often a subjective recognition of this by the patient, who is himself conscious that every mental process, particularly if it is at all complex, is only accomplished by the expenditure of an abnormal amount of energy. To the observer the actual association of ideas is evidently slow and imperfect. The higher the intellectual status of the individual the more pronounced does this defect in association become. Partly owing to the distractibility and partly to the difficulty in association the amount of time required for the completion of each mental process is very greatly increased. The patients complain that what they were once able to do in a few minutes now may take them an hour or more. They can not assign a definite reason for this mental change, although they may be fully conscious of the fact that it is abnormal. As the disease advances the defects in association, which are at first demonstrable only in connection with the more complicated processes, may modify even the simplest mental effort. For example, if a series of words is written down on a paper and the individual is asked to give the antithetical word or phrase, it will be noted, as a rule, that, if done at all, this is accomplished only with the greatest difficulty. Gradually the patient becomes unable to control even the simpler associations, and practically all forms of connected or associated thought are finally abolished. Frequently, however, defects in the ordinary forms of association as well as the anomalies in the mental synthesis and in the

re-collection and redevelopment of past events are in part hidden by an endeavor on the part of the patient to supply the breaks in continuity of thought by flights of fancy. Thus, we often encounter individuals who, although recognizing the attendants or their immediate environment, endeavor to fill up the gaps in memory by drawing upon their imaginations in order to find a plausible explanation for circumstances which they feel to be unsatisfactory. As the dissociation of thought continues, marked confusion and a true primary incoherence may result.

(4) Anomalies of sensation are not uncommon in all stages of paresis, but on account of the mental state of the patient it is frequently impossible to make a satisfactory demonstration of their existence. Sensation for touch, temperature, and pain is not often seriously disturbed. Marandon de Montyel,[15] after making careful examinations of the sensibility in a comparatively large number of paretics, has come to the conclusion that whereas touch is comparatively normal in the majority of cases during the whole course of the disease, the pain sense is disturbed in at least one-fourth of all the cases. Somewhat rarely hypæsthesias or analgesias depending upon peripheral lesions are encountered, whereas hyperæsthesias are said to be of even less frequent occurrence.[16] Nevertheless, it is probable that the psycho-anæsthesias, psycho-paræsthesias, and psycho-hypæsthesias are of far more frequent occurrence than is commonly believed. The so-called coenesthetic euphoria referred to by the French writers undoubtedly depends upon these psychic disturbances, and in the more advanced stages of the disease the patients not infrequently pound themselves with their fists or purposely inflict some injury upon themselves, actuated by the mere spirit of bravado or to show the observer the truth of their claims that they possess qualities superior to those of the ordinary individual. To one particular form of analgesia—an anæsthesia for pain on pressure over the ulnar

[15] De l'évolution comparée de la sensibilité étudiée chez les mêmes malades aux trois périodes de la paralysie générale. Bull. de la société de méd. ment., Sept., 1902.

[16] Ballet: Traité de Pathologie Mentale. 1903.

nerve as it passes the olecranon process—first noted by Biernaki in 1894 some specific diagnostic importance has been assigned by some authorities, but the same condition has been noticed in a variety of other forms of alienation.

Psycho-paræsthesias are not uncommonly met with, the patients complaining of vague disturbances in various portions of the body—formications and other extremely annoying sensations. At times unpleasant sensations are referred to the internal viscera, and when these occur in the later stages of the disease the patients endeavor to interpret their importance in various ways. The special sense organs may be affected, and hyperæsthesias as well as paræsthesias of the retina, of the auditory apparatus, of the olfactory tract, are not rarely met with.

In the earlier stages the hallucinations are very apt to belong to the elementary forms and may be associated with touch, sight, hearing, taste, or smell; when, as occasionally occurs, they are unilateral in character, they are generally connected with disturbances in the peripheral tracts. Recently attention has been called to the fact that hallucinations, particularly the haptic forms, are somewhat more common, and Sérieux affirms that they play a more important rôle in the genesis of the delirious states than was originally supposed. They are probably most common in cases complicated by alcoholism and other toxic conditions. The occurrence of psychomotor hallucinations has been referred to by Séglas and other observers. The occurrence of these as well as the auditory forms is not infrequently associated with certain localized disturbances in the corresponding sense area. Not infrequently during the course of the disease periods occur which are characterized by a great exaggeration in the intensity of the hallucinations, so that there develops a true hallucinatory mania.

Marked changes in the organic sensations usually develop early in the disease. This is particularly true in regard to the increased sense of fatigue; in fact, in a number of cases the presence of this symptom alone in the absence of more specific somatic changes may render it impossible to determine whether

we are dealing with a neurasthenia or a dementia paralytica. This sense of fatigue is common not only after mental exertion, but is also frequently noticed after any severe physical effort. On the other hand, at a still later stage some patients instead of complaining of fatigue seem to be entirely devoid of this sensation. Effort costs nothing, and the tireless and unremitting activity of such individuals is strongly suggestive of the similar condition which ushers in an attack of manic-depressive insanity. Such individuals are never still, constantly planning and undertaking: they are living examples of perpetual motion. Occasionally cases are met with, particularly those following trauma, in which apathy is among the first of the mental symptoms. Often the period of depression or exaltation is ushered in by one characterized by an excessive irritability. The patient is unable to perform his daily duties, since every trifle is a source of great annoyance, and every form of stimulation seems to evoke an abnormal reaction. The simplest interrogation arouses an immediate sense of antagonism and may provoke an explosion of temper accompanied by tremor, reddening or blanching of the face, and all the visible signs of great anger. Such individuals, if their purposes are crossed, are very apt to resort to violence. Not infrequently the emotional anomalies are characterized also by outbreaks of apprehensiveness and marked anxiety. Sometimes the unpleasant sensations are referred to the head or chest, more particularly when there are marked signs of disturbances in the cranial nerves or in the circulation. Frequently, however, the anxiety and apprehensiveness is general in character and may be directly associated with and apparently induced by one of the explosive outbursts of temper. These emotional disturbances may persist for some time and may then be followed by the depression or exaltation.

These more or less primary defects in the mental faculties give rise to a great variety of changes in the character, which vary somewhat with the social as well as the intellectual status of the individual; hence the ability of the physician to recognize the condition will depend to some extent on a knowl-

edge of the individual prior to the onset of the disease. The primary disturbances in the personality are characterized by a lack of judgment. The patient begins to lose his sense of proportion, of the relative value of things in general; his higher moral sense becomes blunted; the sense of duty is diminished or entirely absent; business interests, professional engagements, social and family ties, are ignored. As a rule, the earliest disturbances are confined to the autopsychic consciousness. There is a change in the conditions which determine the personality of the individual. Such patients are apt to become egotistical. They are self-centred, but except in a certain set of cases there is an absence of hypochondriacal sensations. The sense of well-being is exaggerated, and in contrast with hypomania is apt to be persistently and consistently magnified. The patients are intent on carrying out some new plan or scheme connected with their business. They affirm that the great opportunity in life, for which they have long waited, has at last come. For years they have been getting ready to meet such an emergency, and they undertake any extravagant scheme without considering the probability of failure and with indomitable assurance that the ultimate success of their ventures is merely a question of time. At first this abnormal self-reliance becomes apparent only in certain directions, generally along the lines in which the patient's activities have been most prominently directed prior to the onset of the disease.

Not uncommonly the apparent increase of energy in an individual is a source of wonder to his friends or business associates. At first the abnormality characterizing the acts or physical processes of the individual does not become apparent, and the failure on the part of the medical attendant to recognize an incipient case of paresis frequently gives rise to serious results financially, particularly if the individual has been able to impress trusting associates with the apparent practicability and ease with which his countless schemes can be successfully carried through. Not infrequently in these earlier stages, associated with the defects already enumerated, such individuals show a marked tendency towards alcoholism, and, as a rule,

are particularly susceptible to the toxic effects of the drug. In most of the cases various sexual irregularities make their appearance—urinating in public before women, exhibitionism, the loss of all sense of decency, uncontrollable erotic impulses that may result in assaults upon young women or children, and sexual perversity. Later the period of excess is followed by a marked diminution of the sexual appetite and impotence.

The *insane ideas* that occur during the course of the disease are very varied in character and some have long been regarded as being in a sense specific. This is particularly true of the forms which will be described later when dealing with the expansive type of the disease. These ideas are apt to be largely colored by the emotional tone of the individual. For example, in the states of depression the individual is possessed by hypochondriacal ideas, by curious notions regarding his own personal identity, or more or less typical nihilistic ideas; while in the expansive stage the euphoria is accompanied by ideas which equally reflect the delirium. Their genesis has been studied by numerous authors, but considerable discrepancy still exists as to the exact manner in which they develop.[17] Wizel as a result of a careful study has come to the conclusion that the disorientation in time and space, to which reference has been made, is in part responsible for the development of the more or less characteristic insane ideas. Another important factor in their pathogenesis, according to the same author, is the anomaly in the stereometric sense as well as the defects in memory. These defects give rise secondarily to exaggerations of the time and space sense that become evident in the extraordinary character of the delirium. As a result of these mental anomalies the paretic suffers from a general dissociation of both abstract and concrete ideas. Gross,[18] on the other hand, maintains that

[17] Störring, Gustav: Vorlesungen über Psychopathologie in ihrer Bedeutung für die normale Psychologie. Leipzig, 1900. Wizel, Adam: Ueber die Pathogenese des specifischen Wahns bei Paralytikern. Ein Beitrag zu psychologisch experimentellen Untersuchungen über die Dementia paralytica. Neurol. Centralbl., 1903, August 1, Nr. 15, S. 723.

[18] Gross, Otto: Ueber die Pathogenese des specifischen Wahns bei Paralytikern. Neurolog. Centralbl., 1903, September 1, Nr. 17, S. 843.

the mode of development of these ideas is essentially different from that in other forms of mental disturbance. This delirium is not in any respect an attempt on the part of the patient to explain the strange ideas which are forced into his consciousness, but is to be regarded as the result of a process similar to that occurring in hysterical individuals who narrate the most extraordinary adventures without any foundation of truth. Both phenomena are merely the product of the imagination. In addition to these insane ideas which are characterized by their strangeness and incoherency we frequently meet with other forms similar to those developing in paranoic states, these latter being the result of an attempt at explanation on the part of the patient of the isolated facts in his consciousness.

Somatic Symptoms. Disturbances of Motility.—Among the abnormal motor manifestations are *tremor* and *incoördination of the muscles* of the trunk, extremities, face, tongue, and those connected with speech and deglutition. The disturbances are very varied and depend in great measure upon the localization of the disease process. The cases in which the pathological changes affect the spinal cord naturally afford a great variety of neurological symptoms. Closely associated with the cortical changes in all cases of paresis a slight incoördination of all muscular movements not uncommonly develops. This is particularly apt to first make itself noticeable in connection with the more complicated procedures, such as the finer movements of the fingers, the contraction of the facial muscles, and those concerned in the coördination of the movements of the eye. The tremor, which is present in a large number of cases, is, as a rule, fairly rapid—from four to six or more oscillations in a second. It may be easily demonstrated by making the patient extend his arms, stretch out his fingers, or protrude the tongue; and even if not at first apparent in the muscles supplied by the facial nerve, it may be brought out by asking the patient to show his teeth, not allowing him to actually touch them with his lips and thus steady his movements. This method is frequently sufficient to demonstrate

the existence of a marked tremor in the region of the labionasal fold, and may also be observed in the lips and when more intense in the muscles about the eyes, particularly in the lids; occasionally it is well marked in the region of the frontalis. Fibrillary tremors in the muscles sometimes exist. Generally the contractions are slow, but this apparent interference with function is apt to be largely superficial and does not seem to involve the deeper layers of the musculature. The tremor of the tongue is frequently so marked as to be a source of great annoyance to the patients, and they will often try to conceal it when talking by opening the mouth very widely and protruding the tongue, their attempts to steady it giving rise to the most curious grimaces, which should readily excite our suspicions. It is a matter of common experience that the tremor is not always constant but varies considerably, its extent depending more or less directly upon the general physical condition. At certain times movements of incoordination seem to be more marked, and frequently one can notice slight spasmodic disturbances in the musculature which assume a more or less clonic character.

The gait of the paretic is, as a rule, characterized by some uncertainty, the degree depending largely upon the extent of involvement of the cord centres. As a rule, all grace and delicacy of movement seem to be lost early, and the individual who prior to the onset of the disease showed refinement and good social breeding becomes awkward and clownish in his manners and appears ill at ease.

The electrical response of the muscles in cases of general paresis uncomplicated by disturbances in the peripheral nerves as a rule show no marked or specific change.[19] Lenzi[20] and other observers have noticed a partial reaction of degeneration in the terminal stages.

Not infrequently a spasmodic contraction can be noticed in various parts of the body, and it is probable that this phe-

[19] Pilcz, A.: Ueber Ergebnisse elektrisch. Untersuch. bei Paralys. Progress u. Dement. senilis. Jahrbücher f. Psych. u. Neurol., 1903.

[20] Della reazione elettrica nerv. e muscolare nelle paralisi generale progressiva degli alienati. Ann. di Nevrol., 1899.

nomenon is not always confined to the musculature of the trunk and extremities, but occasionally implicates the muscles of the bladder and other internal organs. Occasional instances of catatonic rigidity have been reported, but the histories of the cases in which this is said to have occurred are not given in sufficient detail to warrant the deduction that the typical form is ever noticed in the course of general paresis.

Disturbances in Speech.—The anomalies of movement are particularly liable to implicate the musculature of the organs concerned in speech and manifest themselves mainly in difficulty in articulation and enunciation (dyslalia). They must not be confused with the dysphasias or dyslogias which have to do with impairment of the sensory functions of speech. These disturbances are unquestionably due in part to the interference with the functions of the cerebral cortex. The dyslalia, or dysarthria, at first is merely an exaggeration of the muscular disturbances resulting from fatigue. The patient when asked to pronounce long words, such as Rappahannock River, parallelopiped, finds considerable difficulty in enunciating clearly and distinctly. As a result there is a marked tendency to drop certain syllables and slur others. The difficulties are frequently increased if the patient has been previously fatigued as the result of mental or physical effort. When the disturbance in speech is marked, the attempt to enunciate is accompanied by an increase of the tremor of the lips and marked incoördination of the muscles concerned. The patient not infrequently affirms that his tongue feels thick or that the attempt to enunciate clearly is accompanied by a definite sense of fatigue. The dysphasias are analogous to many of the disturbances noted in sensory aphasia. The occurrence of motor aphasia generally indicates the presence of a complication. The dyslogias are shown in the manner of speech; for example, during the period of marked euphoria the enunciation is apt to be slow and special emphasis is laid on certain words. The speech is not accompanied by refinement of manner or gesture, while in the periods of depression it is even more monotonous and may be replaced by periods of mutism. Many authors have

called attention more particularly to the peculiar intonation of paretics. Marandon de Montyel[21] has recently made this the subject of special investigation. Only in a small proportion of the cases, about one-third, is the character of the voice unchanged. In some cases the alteration is permanent, while in others there are periods of exacerbations and remissions in the defects, the former, as a rule, being much longer than the latter. According to the same observer these vocal disturbances are much more apt to occur in the second than in the first period, while in the final stage motor troubles become extreme. The phonograph has proved of great service in recording the character of the speech disturbances.

Disturbances in Writing.—These are similar to those noticed in connection with speech, and as a French observer has aptly said, "the style is the man." The purely cortical disturbances cause dissociation of thought, so that attempts on the part of the patient to write, aside from the mere mechanical execution, necessitate marked effort. Furthermore, the modifications in the method of expression reflect the emotional and mental state of the individual. Marked exaggeration or hyperbole is characteristic of the period of expansiveness, while the reverse is true for the state of depression. The movements in holding the pen as well as in the actual execution of the letters are coarse and incoördinated, and in the severe cases these defects become so exaggerated that the writing is illegible. The same tendency shown towards the omission of syllables becomes noticeable in the writing. Defects in spelling and orthography may become pronounced. The example of handwriting which follows illustrates the character of the changes.

In addition to the disturbances in motility, already noted, we not infrequently meet with a slight paresis of the muscles supplied by the facial nerve. This is generally unilateral and gives rise to marked facial asymmetry. The space between the

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[21] Contribution à l'étude des altérations de la voix dans les premières périodes de la paralysie générale. Journal de Neurologie, 1901, Nov. 5, No. 21.

lids is often increased, owing either to a paresis of the orbicularis or to a drooping of the under lid. Sometimes the unilateral asymmetry becomes noticeable only when the patient attempts to speak or pucker his lips, to whistle, or to protrude



Handwriting from case of dementia paralytica to illustrate excessive tremor

the tongue. Disturbances of the ocular muscles are not infrequent, and temporary paresis of those supplied by the third and sixth nerves is of considerable diagnostic importance (Hiram Woods).[22] The paralyses that occur as the result of complications will not be described in full here, a comprehensive account being available in the various articles and text-books on neurology. The general muscular power, as a rule, is diminished, although single muscles or groups are more affected than others. It may be said, however, that a definite monoplegia or hemiplegia is to be regarded as an evidence of a focal lesion.

Disturbances of Vision.—The disturbances of vision that occur during the course of paresis are frequent and varied in character. Frequently in the early stages we meet with disturbances in the mental processes connected with the visual processes that are suggestive of the functional disorders noticed in

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[22] Schmidt-Rimpler, H.: Die Erkrankungen des Auges im Zusammenhang mit anderen Krankheiten. Wien, 1898.

neurasthenia and hysteria. Associated with attacks of migraine, which are not uncommon, are encountered a great variety of visual anomalies which are ordinarily associated with these attacks and are probably caused by the action of certain toxic substances upon the visual cortex.

Inequality of the pupils is frequently noted and when well marked is of considerable diagnostic importance when taken in conjunction with other symptoms. Not only is an inequality frequently noticeable, but the outlines of the pupil are also irregular. In the earliest stages of the disease, particularly at the time when the neurasthenic symptoms are marked, the light reflex is often very active and sometimes a definite hippus is present. Following this period the reflexes for light may gradually become more and more sluggish, until at last, after varying intervals of time, the light reflex may disappear altogether although accommodation is retained. The typical Argyll-Robertson pupil, however, seldom appears except in the cases which begin with tabetic symptoms. An inequality and irregularity of the pupils with a diminished light and accommodation reflex probably form the most common combination of symptoms. The so-called paradoxical light reflex—the pupil not contracting when suddenly exposed to a bright light but dilating shortly afterwards—has been noted in some instances. This whole subject has been reviewed by Piltz,[23] who affirms that the true paradoxical light reflex is a very exceptional symptom and occurs only in association with severe organic lesions of the central nervous system. It may easily be confused with the change that occurs in the pupils on convergence, divergence, or with the hippus, as well as with the effect produced by heat stimulation of the sympathetic and the so-called orbicular reaction.

Atrophy of the optic nerve occasionally occurs, but is not nearly as common as it is in tabes. It should, however, be stated that some observers have reported its occurrence with much

[23] Neurolog. Centralbl., 1902, Nov. 1, Nr. 21, and Nov. 16, Nr. 22.

greater frequency. Keraval and Raviart[24] maintain that the sclerosis of the optic nerve, when it does occur, may be either insular or annular in character. In all probability it is more common in patients who have not come under medical treatment until late in the disease. This conclusion is based upon the fact that it is much more commonly observed in public institutions where the patients are only received after the disease is well along in the second stage than in private hospitals where patients are accepted at a much earlier period. These same observers[25] affirm that the fundus is normal in 38 per cent. of the paretics that have come under their observation.

Reflexes.—The reflexes in general paresis have been studied by numerous observers, and the character of the disturbance noted has been found to depend largely upon the character and extent of the spinal cord lesions. In the cases complicated by tabetic changes the deeper reflexes may be diminished or abolished in the later stages, although before they may have been increased. Not infrequently the deep reflexes are temporarily abolished. This is particularly apt to be the case when sugar appears temporarily in the urine—in the so-called pseudo-pareses of diabetic origin. The statistics regarding the number of cases in which the deep reflexes are impaired or abolished vary considerably, a difference that depends largely upon the stage of the disease at which the observation is made as well as upon a number of other conditions, such as the variations in the type of the disease in different localities. In fully one-half of the cases the reflexes are increased or exaggerated. This is in part due to the absence of the ordinary cortical inhibition as well as to the lesions in the lateral pyramidal tracts. The superficial reflexes—more especially the pharyngeal and cremasteric—are frequently altered, so that early in the disease it is not uncommon to find them greatly exaggerated. The Babinski reflex may or may not be demonstrable.

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[24] Keraval et Raviart: Etat du fond de l'œil chez les paralytiques généraux et les lésions anatomiques initiales et terminales. Archives de Neurol., 1903, Janvier.

[25] Arch. de Neurol., 1904, Mars, No. 99.

Vasomotor and trophic disturbances are present in nearly all cases and are very varied in character. Disturbances of the circulation, most marked, as a rule, in the head, face, and extremities, are relatively common. Sometimes there is a slight cyanosis of the face and associated with it an œdema of the eyelids not infrequently resulting in an apparent ptosis. It is true that similar disturbances are found in other psychoses, nevertheless, their importance should not be underestimated as an aid to diagnosis in the very early stages of the disease. The occurrence of these congestions and localized œdemas is explained by a number of observers as the result of a paresis affecting the vasomotor system.[20] Not infrequently a diffuse sweating may be noticed, which is particularly apt to occur after the subsidence of an emotional outbreak. The sweating in some cases is localized, being confined to certain portions of the body, but occasionally a marked unilateral hyperidrosis is noted. Numerous writers have referred to the importance of hæmatoma auris in paresis as well as in other psychoses, but, as Robertson has shown,[21] the occurrence of these othæmatomata is wrongly attributed to vasomotor disturbances, observations having shown this phenomenon to be the result of degeneration in the cartilaginous substance of the ear. Sometimes an abnormal dryness of the skin is noted, while other patients suffer from seborrhœa, purpura, or herpes; again, when lesions of the posterior columns of the cord are present, perforating ulcers are apt to occur.

The arthropathies are not uncommon in the cases in which the tabetic symptoms are prominent, and even spontaneous fractures are sometimes met with. Among the trophic disturbances which play an important rôle are those associated with decubitus. During the terminal stage, unless the patient is kept scrupulously clean and the skin frequently bathed and all points of continuous pressure are relieved as frequently as possible, bed-sores are apt to develop which are exceedingly difficult to

[20] E. v. Niessl: Ueber Stauungserscheinungen im Bereiche der Gesichtsvenen bei der progressiven Paralyse. Berl. klin. Wchnschr., 1902, Nr. 35.

[21] Robertson, Ford: Pathology of Mental Diseases. Edinburgh, 1900.

treat and may eventually prove the starting-points of a general infection. Some patients are annoyed by a profuse flow of saliva.[18]

Febrile disturbances are of common occurrence, and practically a case never comes under observation in which at some time during the course of the disease, particularly in the terminal stage, abnormal temperatures are not noted. Slight daily variations are found even when no marked complication exists. The curve is generally irregular and the rises may or may not be associated with an exacerbation of the gastro-intestinal disturbances, constipation, retention of urine, or some lesion in the respiratory tract. Furthermore, it is probable that febrile movements are sometimes due to central lesions. As a rule, there is a marked rise (to 40° C. or over) accompanying the so-called paretic attacks. Subnormal temperatures are sometimes noted, particularly in the terminal stage, and are not infrequently associated with symptoms of collapse.

Vagaries in the action of the *heart* are frequently noted. The rhythm is sometimes irregular, the rate is usually increased, but when a meningitis exists or the paretic process progresses towards the lower centres (vagus) there may be a marked bradycardia. The vascular disturbances frequently give rise to secondary disturbances in the action of the heart. In the periods of depression, as a rule, there is a rise in the arterial tension, whereas during the excitement a fall may or may not be noted. The *respiratory changes*, unless they are the result of complications, are purely of a functional nature. On account of their lowered resistance such patients are particularly liable to bronchitis and pneumonia, or even pulmonary abscess.

The general nutrition of the paretic, as a rule, suffers, the deterioration becoming more noticeable with the greater acuteness of the symptoms. In the galloping cases, as a rule, the *weight* drops and remains low, the patient sometimes losing ten, fifteen, or even twenty pounds in a few weeks. In the more

[18] Marandon de Montyel: Contribution à l'étude de la sialorrhée dans la paralysie générale. Gazette des hôpitaux, 1902, pp. 1087 et 1095.

chronic forms of the disease, especially when the patient is under proper treatment in a hospital, the apparent subsidence of the acute symptoms is generally associated with a gain in the bodily weight. The disturbances in the function of the liver are various. It is not rare to find an increase in the hepatic dulness. The secretory functions of the stomach, as a rule, are materially altered. There is sometimes a diminution in the hydrochloric acid or even a complete achlorhydria. Constipation often alternates with severe attacks of diarrhœa. As would be expected from the pathological changes, the urine is seldom normal and in the majority of cases shows more or less marked anomalies. Probably the most common of these is an intermittent albuminuria with or without the presence of hyaline casts. Peptonuria is said to be more frequent in this than in any other form of alienation. The quantity of these abnormal constituents is likely to reach its highest point during the attacks of excitement. Acetonuria and glycosuria are often noted, and, as has already been pointed out, the appearance of these constituents in some cases seems to bear a close relationship to the symptoms (pseudo-paresis of diabetic origin). Polyuria is sometimes noted, particularly in the early stages of the disease.

The course of the disease may be broadly divided into three periods: (1) the prodromal (stadium prodromorum); (2) the second, in which the mental and physical symptoms become fully developed (stadium conclamatum); and (3) the terminal stage, during which the dementia becomes more marked and finally terminates in death (stadium terminale).

The first period may extend over a number of years, and in many cases the earliest symptoms cannot be distinguished definitely from those of neurasthenia or the psychasthenic states.[*] In this first period, except in the acute cases, the disease is almost always slowly progressive, and the neurasthenic manifestations, when not associated with the specific mental anomalies or the bodily symptoms to which reference

[*] Schaffer, Karl: Anatomisch-klinische Vorträge aus dem Gebiete der Nervenpathologie. Jena, 1901. Zehner: Vortrag über cerebrale Neurasthenie und deren Verhältniss zur progressiven Paralyse, S. 259.

has been made, can only be distinguished from those of a true nervous exhaustion or psychasthenia by this steadily progressive tendency. The recognition of the paresis is even more difficult in this early stage in individuals who would naturally be classed among the so-called degenerative neurasthenics, in whom there is a marked family predisposition towards nervous and mental disease and who all their lives have been nervous and subject to various psychasthenic manifestations, such as defects in the intellectual and moral spheres, and who may or may not have presented a variety of episodic symptoms.

In the *second period* the mental and physical symptoms already described become more prominently developed, while in the *final stage* the dementia attains its maximum development, the physical symptoms are greatly accentuated, and some intercurrent trouble generally hastens death.

The different clinical forms of the disease may conveniently be described under five heads: (1) the acute or so-called galloping paresis—*forme foudroyante;* (2) the depressed or melancholic type: (3) the expansive or classical type: (4) the simple dementing form; (5) the atypical cases.

Acute or Galloping Paresis, Forme Foudroyante.—Considerable confusion exists in regard to the propriety of including certain cases under this category. As long ago as 1852 Beau [20] described a series of cases which were characterized by febrile symptoms, incoördination of movements, and various forms of delirium, ending in death within two or three weeks after the onset. A majority, if not all, of these cases not improbably belong in the category of the acute deliria. Forms, however, certainly occur which run their course in from six to twelve months and on post-mortem examination reveal a series of changes identical with those described as characteristic of general paresis. As Buchholtz [21] has shown, we must exclude from this group such cases as begin with a slowly progressive

[20] Paralysie générale aigüe. Archives générales de médecine, 1852.
[21] Arch. f. Psych. u. Nervenkrankh., Bd. xxxvi, H. 2.

prodromal period culminating in an acute outbreak with a fatal termination. Furthermore, there must be excluded from this group of cases those which begin with acute symptoms but are complicated by some intercurrent trouble, such as tuberculosis, sepsis, etc., not the immediate result of the disease process. Some observers would have this category still further restricted to those cases which terminate rapidly in death after delirious or coma-like states with severe seizures, the result of an exhaustion of the nerve-centres (Heilbronner). Weber[32] maintains that the group of symptoms frequently described as occurring only in galloping paresis is not above suspicion, as the proof has not yet been given that this particular symptom-complex is specific for the disease, and, further, that the clinical picture drawn by Buchholz by no means forms an entity, but rather represents an accident determined by secondary factors, such as the anatomical localization of the disease process in certain areas, accidental injuries, the result of faulty nutrition, exhaustion, and so on.

There is, however, a class of cases that begin with a very acute onset. The patient may for several days or one or two weeks have shown signs of nervousness, irritability, depression, slight excitement, insomnia, and loss of appetite, but none of the physical symptoms characteristic of paresis need be present. Then suddenly an acute outbreak occurs characterized by marked disturbance in orientation, a tendency to confuse the identity of friends and members of the family, these manifestations being sometimes accompanied by exhilaration or exaltation which may or may not progress to a marked megalomania. Generally such patients are very excited, aggressive; they lose all sense of decency, are overwhelmed by hallucinations both auditory and visual, which for a time seem to dominate their actions. During these periods of excitement these individuals are exceedingly dangerous, not only to themselves, but also to those about them. The emotional instability is often quite

[32] Ueber die galoppierende Paralyse nebst einigen Bemerkungen über Symptomatologie und pathologische Anatomie dieser Erkrankung. Monatschr. f. Psych. u. Neurol., Bd. xiv, November, 1903, H. 5, S. 374.

marked. For a short time the patient is hilarious and excited, or, again, there may be intervals of depression and weakness. In the earlier stage of the delirium the physical symptoms of paresis may be practically absent, but gradually the somatic changes make their appearance. There is generally considerable difficulty in making the proper tests, but when this is possible it is often found that the consensual reflex is becoming less and less active for light. There are apt to be slight facial inequalities due to paresis of the nerve and mild disturbances of speech. As a rule, the incoördination of movements becomes marked and may develop into a pronounced ataxia. Weygandt affirms that the bodily symptoms develop rapidly, and always keep pace with the mental deterioration, but our own experience has by no means confirmed this view. At times the excitement amounts to a frenzy, rivalling that of the epileptic psychoses. If left to themselves, the patients rush up and down the room, gesticulating and threatening attendants and physicians with vengeance; they refuse food and will not allow themselves to be touched. Occasionally the mental symptoms may on superficial examination resemble those of manic-depressive insanity, but the apparent flight of ideas in which sound association and alliterations predominate is in reality not so marked as in the latter class of cases. The distractibility of such patients is pronounced. Each new stimulus, as it impinges upon the cerebral cortex, produces an immediate reaction at once reflected in the speech or action.

Remissions are not infrequent, and the greatest excitement, associated with an hallucinatory mania, incoherence, and megalomania, may alternate with periods of calm characterized by a remarkable disappearance of both mental and physical symptoms. If death does not follow as the result of some accident or intercurrent trouble, such as pneumonia, infection, Bright's disease, etc., the patient may sink rapidly during one of the periods of excitement from pure exhaustion. The history of the following case illustrates this type of the disease:

Male, aged 37, married. Admitted to the Sheppard and Enoch Pratt Hospital October 29, 1901. Died March 2, 1902.

Family History.—Negative.

Personal History.—No history of severe illness. No previous alienation. History of probable luetic infection several years ago, for which he was treated.

Present Illness.—During September, 1901, patient began to lose interest in his work. He became quite nervous and worried about his work and complained of digestive disturbances, for which he consulted a physician. Two weeks prior to his admission to the hospital he stopped work, became markedly apathetic, and at times hypochondriacal. Marked insomnia developed and vague suspicions. He feared that persons were coming into the house at night and was also troubled with auditory hallucinations.

Examination in Hospital, October 30.—Lying in bed, apparently comfortable; takes no notice of persons entering the room; gives name correctly and year of his birth, although unable to give his age in years. Has slight subjective appreciation of defect in memory. When he tries to speak his tongue becomes tremulous and immovable, as if the muscles were easily fatigued. At times the deeper muscles are thrown into play and the lower jaw is frequently moved to the right. The lips are puckered and the words come with an explosive force. There is some slight slurring and a tendency to drop syllables, but the defect is not sufficiently marked to be regarded as characteristic of a typical case of paresis. The patient is distractible and emotional. He talks a great deal about having contracted syphilis, and fears that he has given the disease to his wife. He has marked religious fears and is anxious to know whether he can be cured. He occasionally complains of hearing voices which tell him disagreeable things. There is marked incoherence. At times he is slightly impulsive, springing up in bed and pointing to the electric light fixtures, which he wishes to have removed. Once during the examination he jumped up in bed, threw off the coverings, and went through the motions of taking a bath. When he became quiet he did not seem to remember what he had done. He would give no reason for his actions except once to say "It's putrid."

Physical Examination.—Strong frame, poorly nourished. Takes an occasional interest in what is going on about him and follows the movements of persons in the room. The pupils are equal, dilated; direct and consensual reactions for light normal; accommodation also normal. Reflexes: Dermatographia well marked. Abdominal skin reflexes scarcely perceptible. Cremasteric reflexes present on both sides. Muscles: No apparent insufficiency in the eye muscles. No nystagmus. The grip of the two hands is markedly different. The greater force at first is in the right hand.

Heart: No marked enlargement. Sounds clear at apex. Second sound at base slightly accentuated. Arteries slightly sclerotic. Inguinal glands slightly enlarged on either side, firm, but showing no shotty consistence. No nodes on the tibia.

Urine: 800 cc. in 24 hours. Specific gravity, 1025; distinct trace of albumin, urea 1.32, indican diminished. No casts.

A few days after the first examination the patient became much more

restless and emotional. The distractibility was increased. In a few days the incoördination of the muscles of the face, eyes, and tongue became much more marked. The speech was low and muttering. When his arms were held out the involuntary and incoördinated movements became much more marked, and at times were choreiform in character. At times the patient would be in a very good humor, and his conversation would become slightly more connected and logical. He affirmed that he loved every one and wanted to be loved by every one. He claimed to have made several excursions to Heaven and described meeting persons as tall as the room. Occasionally he had attacks in which the motor restlessness and general excitement became very intense, and on a few occasions he was aggressively violent, threatening to kill any one who came near him. The speech disturbances became more marked. The condition did not change materially until February, when he had several epileptiform convulsions, accompanied by complete loss of consciousness and general sweating; the tongue was bloody from having been bitten, and the respirations were shallow. The eyes, as a rule, were fixed towards the right and upward. At times there was a slight oscillation of the eyeballs, somewhat rhythmic, and suggesting nystagmus. Towards the middle of the month the excitement became more intense and his ideas and delusions first became definitely expansive. At the end of the month the patient became distinctly worse and very drowsy. There was no evidence of any pulmonary lesion. The heart sounds were rapid, the first impure at the apex. The urine showed a few casts, but no blood. The patient sank rapidly and died March 2, 1902.

The pathological findings have been described at length,* and it is not necessary to repeat them here except to say that they were all indicative of general paresis.

The Depressed Type.—This form is not infrequent, although the exact proportion can not be accurately expressed in figures. In Europe competent observers affirm that it includes from a fourth to a third of all the cases of general paresis; as a rule, it is characterized by few remissions and terminates fatally in from two to three years. In the prodromal period we meet with a variety of psychasthenic symptoms. Gradually hypochondriacal ideas begin to make their appearance, the patient's insight into his own condition being usually retained longer than in the other forms of the disease. Such individuals not infrequently complain that "something is wrong with

* Paton, Stewart, and G. Y. Rink: Acute Paresis, with Report of a Case; the Clinical History and Pathological Findings. Am. Journ. Insan., 1903, vol. lix, No. 3.

them;" they are conscious of defects in memory and begin to feel that they can not trust themselves in the performance of their ordinary routine duties. They notice their inability to focus the attention, to make any prolonged mental or physical effort, and not infrequently affirm that they are going to lose their minds; that there is no hope for their recovery. At times they suffer from severe attacks of migraine, or again they may be subject to headaches so persistent and of such a localized character as to suggest the existence of a neoplasm. As a rule, such patients, particularly in the earlier stages, are very irritable. This affective state becomes the more noticeable if the genuineness of their complaints is for a moment called into question. Not infrequently the depression is interrupted by intervals of apprehensiveness and anxiety during which the motor restlessness increases and the patient becomes greatly excited. Frequently insane ideas characterized by marked oddities and absurdities make their appearance. These are liable to become even more persistent when the disease reaches the highest stage of its development. The patients hear voices, sometimes referred to the chest, abdomen, or to other parts of the body; or, again, they are projected and seem to come from various corners of the room, from under the bed, or from outside of the windows. Occasionally the voices are far away, lack subjectivity, and have some of the characteristics of psychic hallucinations. As a rule, they say unpleasant or obscene things, scold, threaten, or terrify. The specific character of the hallucinations reveals an existing dementia. Now and again the patient may apparently be convinced of their subjectivity for a time, but in the great majority of cases the power of recognition is entirely lost. Sometimes patients will sit and indulge in a monotonous, uninterrupted wail, lamenting their condition or their inability to comply with the demands made by the voices. As a rule, the visual hallucinations are less dominating and less insistent than the auditory forms, and occasionally are associated with definite individuals. The haptic forms are not infrequent and are usually associated by the patient with external agencies. Spells are supposed to be thrown over them, and the tingling in their extremities to which

they are subject becomes in their eyes a sign that they have been poisoned by unseen powers. All the devils in Hell are conspiring to make them unhappy and kill them by slow torture. The incongruity displayed by the patients is sometimes remarkable. An individual who affirms that he is Prince Louis of the Pole Star and for hundreds of years has been flying from one world to the other, the possessor of universal power, in the next breath will admit that he is kept a prisoner in the hospital and is unable to get away. Although true remissions in this form are infrequent, exacerbations are not uncommon, at times culminating in a period of hallucinatory mania, during which the patients become very violent and need to be most carefully guarded.

Although these acute exacerbations with the intensification of the hallucinations are more liable to occur in patients who have a marked alcoholic history, they sometimes are met with in those who have always been temperate. The danger from such patients is greatly increased when the ideas of persecution become prominent and render them suspicious of all about them. The physician and nurses become spies, the hospital is a prison or a Hell, the food is poisoned, their sickness is a result of a conspiracy. Every sound is misinterpreted and becomes a sign of some one approaching with some sinister motive or bent on disturbing their peace. Even when these insane ideas are at their height evidences of dementia are nearly always present, and on account of the existing distractibility the patient may be temporarily diverted. Although many of the cases on superficial examination may resemble paranoiic states, such individuals seldom refuse to eat, and if tactfully handled, can, as a rule, be persuaded to do as the nurse desires, except, of course, during the period of greatest excitement. Occasionally the patient passes from the depression into a period of stupor, which, however, can not be regarded in the light of a remission. Personally I have never observed a case in which a genuine remission occurred. This form seems to be relatively more frequent in women than in men, and on account of its comparatively short duration it may be classed next to the galloping

cases as the most severe type of the disease. Such patients are particularly difficult to nurse on account of their suicidal tendencies, and if not restrained frequently resort to violence upon others in order to accomplish their end. If no intercurrent complication develops, they die as a result of exhaustion.

The Expansive Form.—Until recently this was supposed to include the majority of all cases, and on that account was regarded as the classical type of the disease. It is now known, however, that the percentage of the expansive forms is much smaller than that representing the depressed type, only about from one-tenth to one-fifth of all the cases coming under observation belonging to the former category. After the prodromal period the course may not differ essentially from that observed in other types of the disease. The patient gradually begins to lose an insight into his own condition. Although at first he may have been somewhat hypochondriacal and conscious of his mental and physical defects, he now becomes more or less indifferent or apathetic. It is worth remembering that in an individual who belongs to the lower classes of society this change may on casual examination be mistaken for actual improvement instead of a deeper clouding of the intellect. Formerly depressed, the patient now ceases to be hypochondriacal and often appears to be in the best of humors. He is readily elated. The attacks of mild apprehensiveness, as a rule, give way to states of exhilaration, during which the sense of well-being is more or less exaggerated. The patient forgets all his ailments, no longer complains of headache. If he refers at all to his own case, it is in a spirit of the utmost hopefulness, and he affirms that members of his family or his physician exaggerate his symptoms. There is no reason, he maintains, why he can not return to business and the ordinary routine of life. Gradually the self-confidence increases until the word failure is left out of his lexicon. The business man becomes so elated that he is ready and willing to plunge into any new undertaking, to develop his business along new lines; he becomes restless unless there are numerous channels for the discharge of his surplus activity. Any rebuff that is met with is either viewed in a spirit

of utter indifference or only serves to intensify his self-complacency. The sober-minded, phlegmatic individual is puffed up with his own conceit, becomes a braggart, his speech is decidedly bombastic. The affective state is usually one of jubilance or undue elation. The speech is characterized by extravagance, and the individual exhibits many eccentricities of character that are absolutely foreign to him.

The changes in the organic sensations produce an entire absence of fatigue. Such individuals are always ready for any new undertaking and delight in the opportunity to show their supposed mental and physical superiority. Gradually the sense of personal vanity increases until it knows no bounds and is beyond competition. The exuberance of spirit is often shown by the actions—singing, laughing, or dancing. The motor restlessness increases, and with it, as a rule, there is an exaggeration of the tremor, of the incoördination, and clumsiness of movement. The patient displays a still more boisterous aggressiveness and is continually referring to his deeds of prowess or harping upon his supposed physical superiority. The insane ideas are fanciful, extremely grotesque, at times obscene. Not infrequently the delusions are colored by memories of the daily occupation of the individual prior to the onset of the illness. The business man is occupied in devising schemes to extend his business, in making long journeys. The professional man is busy in his profession. As the dementia develops the extravagance of these ideas increases rapidly. Such individuals do not confine their plans and schemes to this world, but often would have them embrace Heaven, Hell, and the whole universe. Nothing can exceed in extravagance the ideas entertained by these patients when the megalomania is at its height. As the disease progresses, the defects in intelligence become more and more marked, and at times periods of great excitement may intervene, during which the patients are liable to tear their clothes or inflict severe injuries upon themselves unless closely watched. The times of excitement sometimes give way to periods of depression and the disorder may take on a circular form. As may be inferred, time and space orientation are

seriously disturbed. The patients seem to retain only in a vague way any appreciation of their surroundings. They are so self-centred in their own delusions that they are absolutely indifferent to the interests of those about them. The emotional reactions correspond with the ideas in consciousness. The sense of power, of well-being, is reflected in all that the patient does and says.

As a rule, the course of these cases is somewhat longer than that belonging to the depressed types. Not infrequently in institutions these patients live for quite a long while—as much as eight or ten years, and some observers have reported cases of much longer duration. There are decided remissions, and although these individuals still refer to their insane ideas and delusions, the intensity of these is diminished and does not seem to dominate the patients unless they are provoked or unduly disturbed. This form of the disease seems to be less frequent in women than in men. Competent observers have concluded that this type is much rarer now than it was twenty years ago, but the question is one that is exceedingly difficult to determine, inasmuch as many of the cases which are now recognized as instances of general paresis at that time were classed in other categories. No form was included unless it was characterized by grandiose ideas and exhilaration. The recognition of so many of the other forms of the disease would, therefore, have a tendency to make the expansive type appear relatively less frequent.

A transition from the second to the terminal stage of the disease is more gradual, as a rule, than in the depressed form, and it is frequently impossible to sharply differentiate these two epochs. As in the other forms, the patient may succumb to various complications. During periods of remission it not infrequently happens that the physical condition improves very markedly and some patients increase quite rapidly in weight.

As a rule, the hallucinations in this form do not play a very important rôle. The auditory are more apt to occur than are the visual forms, but these hallucinatory states are somewhat rare, and when they occur are apt to be only transitory.

The Dementing Form.—According to some observers the so-called dementing type of paresis is becoming more frequent. This view, however, needs further confirmation, and it can readily be conceived that the apparent increase in frequency is due to the fact that these cases, which were formerly overlooked and classed among the various forms of dementia, are now recognized as instances of dementia paralytica. Indifference and apathy are the chief characteristics of individuals afflicted by this form of the disease. In the prodromal period we may meet with periods of depression, but gradually the affective state is replaced by one of apathy. At first the patients show a disinclination to work or to exert themselves, and although for a time retaining some appreciation of their condition, gradually lose it entirely. They sit about the house, taking but little interest in anything that goes on about them; they neglect their work, their families, and become utterly devoid of any sense of duty. When asked to explain their apathy they may make a feeble attempt to do so, but, as a rule, are unable to offer a satisfactory explanation for their conduct. The hypochondriacal complaints which have been more or less pronounced in the prodromal period disappear. The patients, when spoken to, reply in rather a low, monotonous voice, not infrequently in monosyllables, and are unable to give any satisfactory account of themselves or the onset of their disease.

The lapses in attention are more passive than active. The distractibility is not excessive; the instant the patient is left to himself he immediately lapses into this apathetic condition. As a rule, the impairment of the general sensibility seems to be more marked than in the other types of the disease. The patient can be pricked with a needle, pinched, or made to suffer quite a severe injury without any corresponding emotional reaction. As the disease progresses the apathy becomes more and more profound and may, as a rule, be easily distinguished from that characterizing the other forms of dementia. The primary sensations are apt to be greatly impaired, and it is almost impossible to stimulate the patient sufficiently to evoke an emotional reaction of any degree of intensity.

Atypical Cases.—In this category are included a variety of cases which run an atypical course, at least 10 or 15 per cent. of all the various forms. (*a*) Among the more common are those occurring in individuals at a more advanced period of life than is common in cases of dementia paralytica. In some the symptoms are largely local—sensory or motor aphasia, alexia, agraphia, hemianopsia, and loss of certain cortical functions. The general dementia becomes noticeable only in the later stages. In others the course as well as the anatomical changes are of such a nature that it is impossible to differentiate this type of the disease from a senile dementia (Lissauer). (*b*) Among the atypical cases those in which the spinal lesions play an important rôle are not infrequent and include the tabetic, amyotrophic, and spastic forms. In addition to the mental symptoms of paresis, such as have already been described, we have those of the complicating cord lesions; but for a detailed description of these the reader is referred to the various text-books on neurology.

The course of the so-called *tabo-paresis*, occurring in only about 6 per cent. of the cases, in certain particulars is essentially different from that of the other types of the malady.[34] Lues seems to be even a more important etiological factor in these than in other forms. Optic atrophy, paralysis of the external muscles of the eye, an impaired pain sense, relatively little disturbance in speech, severe crises with marked disturbances of the bladder and rectum and prolonged remissions are, as a rule, the most pronounced features in the clinical picture. Occasionally in such cases we meet with peculiar delirious states with vivid and varied hallucinations. The pathological lesions in the cord are closely akin to, if not identical with, the pure degenerative sclerosis of the posterior columns. In a second division the lateral columns are also affected and give rise to

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[34] Tockel, K. E. F.: Besteht eine gesetzmässige Verschiedenheit in Verlaufart und Dauer der progressiven Paralyse je nach dem Charakter der begleitenden Rückenmarksaffection? Psych. Klinik in Marburg. Inaug. Dissert., 1903.

spastic symptoms, while in the third group there is a combination of both forms of the lesions.

We are particularly indebted to Dr. H. A. Cotton for the following note on the much-mooted point as to the relation of tabes and paresis.

Among the supporters of the theory of the identity of the two diseases may be mentioned Raymond, Nageotte, Fournier, Schaffer, and Mott, who base their opinion upon the following facts: (1) That tabes complicates general paresis in at least two-thirds of the cases. (2) The occurrence of symptoms in both diseases which show both as to their onset and development a marked similarity. (3) The identity of the etiology. (4) A similarity in the pathological changes although a different anatomical location. Those who are opposed to this doctrine, Joffroy, Ballet, Forestier, Nissl, and others, maintain that the two diseases are entirely distinct and that when they are associated it is merely a coincidence. The tendency, however, of the two processes to be associated in the same subject is considered by some to be an important point in favor of the former view. This concurrence may occur in one of the three following ways: (1) The initial tabetic symptoms may later in the disease be complicated by those of general paresis; or (2) the converse of this is true; (3) the two disorders appear about the same time and run a parallel course. Those who from a pathological basis maintain that the two processes are not identical affirm that general paresis is a chronic inflammatory process and tabes a degenerative one, while those who dissent from this view affirm that in cases of tabes where no paretic symptoms were noticed during life, after death the lesions characteristic of general paresis were demonstrated in the brain; and, furthermore, that in cases of paresis uncomplicated by tabetic lesions degenerations were found at autopsy in the posterior columns. The question needs still further investigation before a definite conclusion can be reached.

The Cerebellar Form.—Although it has been shown by a number of observers that the cerebellum is regularly affected in a large majority of cases, we meet with a very small number in which it has undergone any marked degree of atrophy. Cases have been described in which the diagnosis of cerebellar tumor has been made. As a rule, later in the disease the symptoms of general paresis develop so that the differentiation becomes possible. Bruder[44] has described a case of general paralysis in which the physical symptoms were an Argyll-

[44] Bruder: Allg. Zeitschr. f. Psych., Bd. lx, H. 4

Robertson pupil, absence of knee-jerk, fairly characteristic speech disturbance and a hemiplegia, and associated with them considerable dementia; this same patient was also subject to apoplectiform attacks. At autopsy it was found that the left hemisphere was 32 per cent. lighter in weight than the right (154 grammes) and that there was a marked cerebellar atrophy on the opposite side. It is by no means clear, however, that such cases are not to be regarded as instances of paresis complicated by localized lesions not in any sense immediately related to the case, but merely accidental. In still other very rare cases the degeneration seems to be more or less confined to the thalamic regions, but what is the nature of the symptoms is as yet only very imperfectly understood. Adolf Meyer, among others, has more recently called attention to the importance of these cases in which the atrophy is excessive on one side of the brain and only slight on the other.

Seizures.—These are frequently the result of cortical irritation and are generally described as apoplectiform or epileptiform in character. They may or may not be accompanied by a rise of temperature. As a rule, the changes in consciousness vary from a slight dulling to temporary abolition. In the latter case the patients fail to react to any form of external stimulation, but lie in a stupor, frequently retaining no control over the bladder or rectum. Necessarily in all instances speech is seriously interfered with. In the milder attacks the patient is able to produce sounds, occasionally words, while in the severer forms with marked loss of consciousness there is, of course, no attempt at speech. The pulse becomes irregular and sometimes dicrotic. As a rule, there is considerable difficulty in swallowing. In some cases various groups of muscles are affected by a clonic spasm, while in other instances there are varying degrees of paresis and occasionally one observes in the non-paralyzed group of muscles a hypertonicity. Sometimes the clonic seizure is replaced by a tonic convulsion. Whenever a permanent monoplegia or hemiplegia develops it may usually be considered as an evidence of the existence of a complication. Not infrequently during the attacks the eye-muscles, particularly those supplied by the third

and sixth nerves, are very apt to be affected. Nystagmus may also be noted. Prior to and following the attacks one not infrequently meets with the so-called trigeminus symptom, when the patient sits and grinds his teeth. Frequently there is a marked difference in the surface temperature between the paralyzed and non-paralyzed areas. During these attacks the seizures not infrequently begin with an epileptiform attack, the patient suddenly sinking to the ground and losing consciousness, after which the symptoms referred to above develop. The reflexes are wont to be interfered with, being sometimes diminished but seldom totally absent except in the severest cases. On the non-paralyzed side the tendon reflexes are often increased. On account of the disturbance in consciousness it is impossible to test the touch and pain sensation with any degree of accuracy. As a rule, the primary sensations are seriously interfered with. There may be temporary blindness or deafness. Not infrequently auditory and visual hallucinations precede the attack. When the motor centres are involved there is motor aphasia and in other cases the sensory aphasia is present. The duration and intensity of the attacks vary greatly. In some cases there is a slight vertigo lasting a few seconds with temporary interference with motility and disturbance of speech; in others there are severe seizures which last for two or three days.

Remissions.—During the course of the disease, particularly in the chronic forms, remissions frequently occur. They are chiefly met with in the slowly progressive cases which begin with tabetic symptoms. Some well-authenticated instances have been recorded in which there was considerable improvement in the disturbances of speech, in the tremor, in the general incoördination of muscular movements and an actual subsidence of the mental symptoms, and such phases may extend over long periods of time. For example, Schäfer[35] reports a case which ran a course of twenty-three years and was charac-

[35] Schäfer, Gerhard: Zur Casuistik der progressiven Paralyse. Lange Dauer und erhebliche Remission. Ztschr. f. Psych., lx.

terized by the remarkable length of the remission. The diagnosis was ultimately verified by the pathological findings. In another case reported by the same author after the disease had progressed steadily for two years a remission almost equal to that in the first case was noted. In the latter instance the patient convalesced so far as to be able to take up again his work as a stenographer, and after examination by the military authorities was said to be entirely well. It is not at all improbable that the remissions are much more apt to occur in cases which come under treatment early in the disease than in those who only come to the hospital after the symptoms are well developed. The remissions in the acute cases are only temporary, while in the expansive and dementing forms they are much more apt to be of considerable duration than in the melancholic cases.

Termination.—In spite of occasional references in the literature to a favorable outcome, the evidence to the contrary at present is so convincing that it may be taken for granted that progressive paralysis always terminates fatally. The supposed cures recorded by Schule, Schäfer, Tuczek, Svetlin, on account of the incompleteness of the records, cannot with certainty be differentiated from instances representing certain phases of manic-depressive insanity, alcoholism, catatonia, or hysterical degeneracy. And even for those cases in which the disappearance of all the symptoms undoubtedly occurred we unfortunately have no positive proof that a restitutio ad integrum took place. Thus in one of Alzheimer's patients who died from an intercurrent trouble during a remission, at autopsy the changes characteristic of dementia paralytica were demonstrable throughout the central nervous system. Sufficient has already been said to show that a great majority of the patients die from some complication, as, for instance, a lobar or catarrhal pneumonia, or an infection, such as cystitis or pyelonephritis, or from pure exhaustion generally described as the paretic marasmus. The course of the disease is progressive and is characterized by the fact that no true—*i.e.*, anatomical—remissions actually occur, and, as has been said, even where all the symptoms have

disappeared the contention that all the histological changes in the central nervous system have been obliterated so that the nervous and other elements are restored to their normal condition is not capable of demonstration, inasmuch as we possess no observations which would substantiate this view. Arnaud[27] reports that seventy-three cases of dementia paralytica who died at the Maison de Santé Vanves did not, during the terminal period of the malady, show any evidence of motor impotence, and in sixteen instances an intercurrent disease was the immediate cause of death. The same observer affirms that severe trophic disturbances are much less common than is generally supposed.

Differential Diagnosis.[28]—The early diagnosis in many cases of dementia paralytica is exceedingly difficult and yet is one that is frequently of momentous importance. The symptoms of paresis may be grafted upon those of neurasthenia, and if such a condition exists it is almost impossible in the prodromal period to recognize the onset of the graver disorder. A diagnosis based solely upon the analysis of the mental symptoms is very apt to be erroneous, although, broadly speaking, the limitations in connected thinking in the neurasthenic are less progressive as contrasted with those in the paretic, and in the former are not commonly associated with flagrant defects in the æsthetic and moral sense.

In paresis the symptoms of which the patient complains are apt to be less evanescent, but more incongruous, or even bizarre, than are those in neurasthenia. The general practitioner is often greatly embarrassed when forced to decide whether or not a patient who during the prime of life begins to suffer from gastric disturbances, a disinclination to work, an inability to focus the attention, slight lapses in memory, restlessness, an abulia of which there may be subjective appreciation without accompanying physical signs, is entering upon the first stage of

[27] Sur la période terminale de la paralysie générale et sur la mort des paralytiques généraux. Rev. Neurol., Août 31, 1903.

[28] Hoche: Die Frühdiagnose der progressiven Paralyse. Halle a/S., 1896. Klippel: Les Paralysies Générales progressives. Paris, 1898.

this form of alienation. In the functional as well as in the organic disorder we may have signs of mental depression of which the patient is at first fully conscious, and in both cases obsessions as well as phobias may play an important rôle. The gravity of the prognosis assumes a more serious aspect when in the face of a definite history of alcoholism the mental symptoms become markedly progressive. In such instances not only one, but several careful physical examinations should be made at short intervals in order that the first positive symptom of paresis may be recognized. It is in just such doubtful conditions that the method of cytodiagnosis, first introduced by Widal,[49] offers an important adjunct in the differentiation, since the occurrence of lymphocytes in the spinal fluid would indicate the existence not necessarily of paresis, but, at any rate, of some organic lesion. In regard to the mental symptoms the appearance of a mild degree of apathy and indifference, or even the suggestion of a general impairment of all the psychic functions, no matter how slight this involvement may be, is a danger signal of more significance than even great and rapid variations in the emotional life, as these latter are not uncommon in psychasthenia. In the classical type of the disease the conduct of the paretic contrasts strongly with the general bearing of the psychasthenic. The latter seldom becomes active, strenuous, determined, or bumptious, but is indolent, resigned, never litigious, and is evidently a person whose volitional movements are more or less inhibited and restrained through doubt or fear, a description which certainly does not apply to the paretic, except, perhaps, in the early stages of the depressed type of the disease. On the contrary, paretics are prone to translate their ideas into action and to go ahead without waiting to count the cost. Again, the insight of the psychasthenic into his own condition is better preserved.

The diminution in the consensual light reflex or the tendency to slur syllables as well as a general incoördination of the muscular movements, when taken in connection with the

[49] Widal et Ravaut: Soc. de Biologie, Juin 30, 1900.

mental symptoms, the slight lapses in consciousness, the temporary epileptiform or apoplectiform attacks, disturbances in articulation, the ophthalmic migraine, and the temporary aphasias or pareses of the extrinsic muscles of the eye, are signs of positive value. The mental activity of the paretic is, as a rule, considerably impaired, while the neurasthenic may retain much of his normal mentality, although attempts to exercise it are accompanied by an increased sense of effort and fatigue.

The differentiation from *hysteria* which sometimes complicates and at other times simulates dementia paralytica is frequently beset with many difficulties, and in the absence of the somatic symptoms, particularly in men, a positive opinion should not be advanced.[*]

It must not be forgotten that even in hysterical seizures there may be a temporary inhibition in the light reflex, and in all doubtful cases judgment should be suspended until the patient has recovered from the immediate effects of the seizure, so that a careful examination is possible. The persistence of an impaired light reflex, the occurrence of difficulties in the enunciation of words, and, above all, the presence of lymphocytes in the cerebrospinal fluid, are factors that should be considered of great weight in the establishment of the diagnosis of paresis.

At times *epileptic attacks* may give rise to difficulties in diagnosis, and it is frequently necessary to keep the patient under observation for some time before the final decision can be made. The sudden appearance of mania with excessive apprehensiveness, exaggerated fears, varied and constant hallucinations which dominate the whole conduct of the individual are, as a rule, much more apt to be indicative of the existence of the functional neurosis. Even in the most acute cases of paresis there is apt to be a prodromal period of one or two weeks prior to the outbreak of the graver symptoms.

Multiple sclerosis, particularly in its early stages and when

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[*] Babinski: Verhandlungen der Société méd. Hôpitaux de Paris. 1892.

occurring at the prime of life, may be mistaken for general paresis. The emotional conditions in the two disorders, however, are apt to be somewhat different. In the sclerotic processes the patient frequently suffers from sudden and inexplicable outbursts of temper of which he generally retains a fairly accurate knowledge, while at the same time he is conscious of the fact that such anomalous emotional states are decidedly abnormal. Nor is there, as a rule, any marked evidence of any general mental impairment. The paretic, on the other hand, may be subject to such outbreaks, but these are more or less constantly followed by apathy or an indifference as to their consequences. The appearance of the scanning speech and the intention tremor are, of course, of diagnostic importance.

But the greatest difficulty in making a decision arises in those rare cases of paresis that begin with a sudden onset and in many respects resemble instances of *delirium acutum*. The history of some direct exciting cause, such as a protracted illness, trauma, some severe mental shock, hemorrhage, the presence of a normal light reflex, the absence of a protracted neurasthenic stage, disturbances in articulation, and paretic seizures, taken together, are factors that are indicative rather of the acute delirious states than of a galloping paresis.

Reference has already been made, when speaking of the atypical forms, to the fact that it is frequently impossible to differentiate a paresis coming on late in life from a *senile dementia*. The clinical symptomatology of *chronic alcoholism* or *Korsakow's syndrome* may bear a striking resemblance to that of dementia paralytica, and frequent references to these so-called pseudoparetics are found in the literature. As a rule, the speech disturbances of alcoholism are distinguishable from those of the paretic, the former being characterized by greater tremulousness and less difficulty in articulation than the latter.[41] An important point in establishing the diagnosis in doubtful cases is that an alcoholic frequently recovers to quite a remark-

[41] See Alcoholism, Korsakow's Syndrome.

able extent, provided that the toxic agent be withdrawn, whereas paresis is apt to be markedly progressive.

The differentiation from *cerebral syphilis* is frequently difficult. Although the luetic infection may give rise to cerebral disturbances characterized by more or less localized motor symptoms combined with incoherence, disorientation, and an hallucinatory delirium with insane ideas, a general mental impairment equal to that which exists in the cases of dementia paralytica is not observed. In lues the speech disturbance is less pronounced and far less characteristic than in paresis. The tendency of the syphilitic process to become more or less localized is an important factor that should always be kept in mind. We not infrequently meet with disturbances in the course of syphilis which may give rise to suspicion of a beginning dementia paralytica, particularly when the Argyll-Robertson pupil is present, together with a marked tendency to mental and physical fatigue, impairment of memory, and slight disturbances in speech.

The excited or depressed states occurring during the course of dementia paralytica may be mistaken for somewhat similar periods in *manic-depressive insanity*. The essential points in the diagnosis have been fully discussed in considering the latter psychosis.

Treatment.—Reference has already been made to the factors that must be regarded as of etiologic importance, and it is unnecessary to repeat here what has already been said in regard to prophylaxis. As soon as a positive diagnosis of general paresis has been arrived at the alienist should at once explain the gravity of the prognosis to members of the family or friends and advise the immediate removal to an institution where the patient can be under constant supervision. Among the wealthier classes, where it is possible to secure the services of trained nurses, so that constant intelligent supervision can be guaranteed, and if the family is willing to take the full responsibility of possible accidents in the earlier stages, the patient may be treated at home. But the fact should be emphasized by the physician that such a course is, as a rule, inadvisable, as such

patients can receive much better care in an appropriate institution. Patients suffering from the classic type of the disease while in the hospital, except during the excited periods, do not need to be as closely watched as those afflicted with the depressed form, as the latter are much more prone to mutilate themselves or commit suicide. In the prodromal period or the early part of the second stage nearly all patients should receive the possible advantages of anti-syphilitic treatment. This may be given either in the form of injections or by the internal administration of mercury either alone or combined with the iodides, according to the indications in each case. The results obtained, however, are seldom gratifying. In the later stages of the disease the symptoms, as they arise, are treated purely symptomatically. At all stages hydrotherapeutic measures, either in the form of packs or prolonged baths, as the indications arise, are distinctly beneficial. As a rule, such patients are much better off without alcohol in any form, although in cases of collapse or in the terminal stages it is frequently necessary to resort to small doses of the drug. In cases of sexual excitability, in addition to the baths, small doses of the bromides are frequently of great value. Insomnia is frequently distressing, particularly during the periods of greatest excitement, and may be combated by the ordinary hydrotherapeutic measures or by the administration of chloralamid, hyoscin, sulfonal, morphin, or bromides, as well as by the application of cold compresses to the head, while the patient is kept in a continuous warm bath for three to four hours. During the paralytic attacks it is frequently impossible to feed the patient except by rectum. At such times benefit may be derived from salt injections either alone or combined with the various substances mentioned in the first section of the book. In retention of urine great care must be taken in the catheterization that no infection is carried to the bladder, since in the weakened condition of the patient a cystitis will surely form a complication and may result fatally. When the mentality is greatly impaired care should be taken that the patients do not choke themselves to death by swallowing their food without mastication. So far as drugs are concerned, ergot

injections have been recommended, and the withdrawal of cerebrospinal fluid under careful aseptic precautions has been said to be followed by amelioration or cessation of the paralytic attacks.

At all times skilled nursing is absolutely essential, adding greatly to the comfort of the patient, preventing complications, and prolonging life. As such patients are at times very dirty in their habits great care must be taken to avoid bed-sores, as the most simple localized infection may prove a menace to life. All points of pressure should be relieved as far as possible by bathing with soap and warm water or a mixture of water and alcohol, by the support of rubber cushions, and by hardening the skin with zinc ointment. The bowels must be carefully regulated, and if marked constipation is present small doses of calomel frequently repeated at intervals are of great value. During the remissions the patient may be allowed to return to his home provided that he can still be kept under constant medical supervision.

The injections of salt solution have been tried with favorable results in a number of cases. The saline infusions were first used in 1890 by Stahli in various forms of intoxications. Recently they have been tried in cases of dementia paralytica.[49] The method of procedure has been described in detail in the first section of the book, in which the formula for the fluid which seems to afford the best results has also been given. In addition to the infusions rectal injections of salt solution are frequently beneficial. During this treatment the patient should be kept quietly in bed and preferably on a fluid diet.

Pathological Anatomy.—In general paralysis of the insane lesions are found in nearly all the internal organs, and even in patients who die early in the disease the changes are not by any means confined to the central nervous system. The visceral lesions have been extensively studied and may be classi-

[49] Donath, Julius: Die Behandlung der progressiven Paralyse, sowie toxischer und infectioser Psychosen mit Salzinfusionen. Allg. Ztschr. f. Psych. u. psych.-gerichtl. Med., 1903, Bd. lx, H. 4

fied as follows:[42] (1) those preceding the development of the malady, such as alcoholic cirrhoses, tuberculous processes; (2) lesions that are more directly related to the disease process,—chronic congestions, visceral hemorrhages; (3) passive congestions; (4) secondary infections (pneumococcus, streptococcus, bacillus coli). Among the pulmonary lesions we not infrequently meet with congestions, catarrhal or lobar pneumonias, emphysema, gangrene, and tuberculous infections. The heart is nearly always affected, myocarditis or endocarditis being often found. The liver, stomach, and pancreas are the seat of chronic as well as acute pathological processes, and the kidneys are practically never normal. Generally vascular lesions are almost always present in varying degrees of intensity. The widespread character of the changes gives rise to a marked cachexia, which is at once apparent in nearly every case.

The *bones of the skull* are frequently altered. Robertson[44] affirms that there is a condensation of the bones, sometimes but not always accompanied by a thickening, while the diploë is frequently thinner and the bony substance may be replaced by cancellous material. In other instances the bones may be greatly thickened and increased in weight, and along the inner surface of the skull bony protrusions of considerable size are often found. Fraenkel's[45] investigations led him to believe that the weight of the skull in general paresis is greater than in any other form of mental disease, but this observation has not been generally substantiated.

Membranes.—The dura may have a normal appearance, but frequently is thicker than in other psychoses and gives evidence of a pachymeningitis externa. The statement that a pachymeningitis hæmorrhagica interna exists in fully half the cases, however, needs confirmation, although it cannot be denied that such a condition is sometimes present. In the more recent cases one is apt to find a fibrinous exudate which in places may

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[42] Klippel: Arch. de néd. expérimen., Juillet, 1891.
[44] Pathology of Mental Diseases. Edinburgh, 1900, p. 68.
[45] Riv. sperimentale di Freniatria, vol. i.

show signs of organization. It was formerly believed that localized hemorrhages of considerable size were not uncommon, but true hæmatomata are rare, and Gross in 124 autopsies on patients dead of paresis found them in only 5 instances. A similar conclusion as to their rarity has more recently been expressed by Fürstner.[46] When hæmatomata do exist, however, they are found either over one or both hemispheres and in rare instances may attain quite a considerable size. Extensive adhesions between the dura and pia are common, but over the convexity the latter is usually opaque and thickened, the change being first apparent along the course of the vessels. Over the basal portion of the pia they are less marked. Frequently when the pia is stripped off from the brain a marked decortication takes place, showing the existence of a leptomeningitis chronica profunda. The increase in the connective tissue of the pia and subarachnoid tissue is frequently noticeable even in the early stages of the disease, although it is not uncommon at this period to find the pia-arachnoid tissue filled with leucocytes. The ependymal lining of the ventricles is often thickened, presenting a granular appearance, and its epithelial layer is degenerated.

The changes in the blood-vessels of the membranes frequently apparent on macroscopic examination are not specific of the disease, inasmuch as similar conditions are seen in alcoholics and various forms of chronic dementia.

The *weight of the brain* is generally diminished (Jensen).[47] The weight of the brain of paretics is about 150 grammes below the average of those individuals who have not suffered from mental disorders. This question, however, is one that can not be settled offhand, as the discrepancies in the various recorded observations are too great to be easily explained. Marchand gives the average weight of the brain of the normal man, between 40 and 49, as 1403 grammes,

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[46] Fürstner: Monatsschr. f. Psych. u. Neurol., November, 1902.

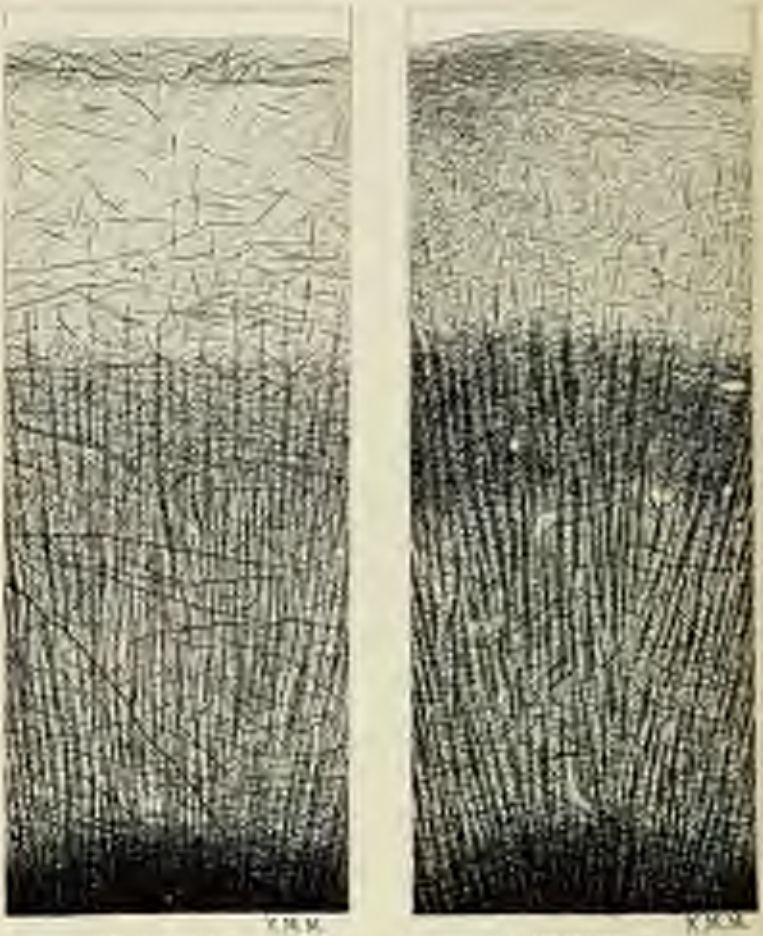
[47] Arch. f. Psych., 1888, Bd. xx. Ilberg, Georg: Gewicht d. Gehirns u. seines Theiles, v. 102 an Dement. Paralyt. verstorb. männlichen Sachsen. Allg. Ztschr. f. Psych. u. psych.-gerichtl. Medizin, Bd. xl, H. 3.

PLATE XI



Section of cortex from a caecal groove, showing thickening of pia arachnoid and adhesions between pia arachnoid and cortex. × 50. Zeiss planar, 16 mm. (Cranial Injury, plate.)

PLATE XII*a*



Gyrus occipitalis.

Gyrus praecentralis.

The two drawings (Plates XII*a* and XII*b*) were made from sections of the cerebral cortex of a man aged 31. Thickness of sections 40*u*. Stained by a modified Weigert method. (No recorded history of mental disease.)

PLATE XIII





but the extreme limits of this so-called normal weight may vary between 1250 and 1550 grammes. The specific gravity of the cerebral cortex is said to be diminished in the more chronic cases. The ventricles are often dilated and there is a marked atrophy of the cortex most noticeable, as a rule, in the frontal and parietal areas. This can be seen in freshly cut sections, the atrophy being usually more marked at the base than at the summit of the convolution.

Two main views are held in regard to the disappearance of the fibres from the cerebral cortex in cases of paresis. The earlier investigations, particularly those of Tuczek, render it probable that in certain cortical areas, particularly in the central and occipital convolutions, the fibres are not severely affected. This same view has been more recently advocated by Schaeffer.[48] Lawrence,[49] after a series of very careful and detailed studies, concludes that in the brains which he has studied the pathological process was more severe in the central and frontal regions. Nevertheless, Kaes,[50] after very extended observations, arrives at a different conclusion. Instead of the localized disappearance of fibres the latter finds that the paretic process is a general atrophy, not only of the zonal fibres, but of those in the second and third Meynert layers, as well as in the Baillarger-Gennari stripes. The disappearance of the fibres is essentially diffuse. In the areas where the fibres are not so densely packed a complete absorption may occur, but in the deeper areas of the cortex, where the fibres are thicker, this rarely takes place. The necessity of further careful comparative studies of all the different cortical areas is essential. The relationship between the extent of the disappearance of the fibres and the duration of the disease seems to be more or less

[48] Schaeffer, Karl: Ueber Markfasergehalt eines normalen und eines paralytischen Gehirns. Neurolog. Centralbl., 1903, September 1, Nr. 17, S. 802.

[49] Studies upon the Cerebral Cortex in the Normal Human Brain and in Dementia Paralytica. Journ. of Nerv. and Ment. Disease, Nos. 10, 11, 12, 1903.

[50] Monatsschr. f. Psych. u. Neurol., Bd. xii, H. 5.

definite. The general consensus of opinion is against the view that any direct relationship exists between the meningeal changes and the atrophy of the fibres. Frequently the nerve-fibres in the cortex appear to be swollen and not infrequently show marked varicosities, being at times broken up into little balls. Some observers have reported the occurrence of hypertrophied axis-cylinders in nearly all cases of paresis. Not only are the fibres in the various cortical areas affected, but marked changes have been observed in the basal ganglia as well as in the medulla and spinal cord. Not infrequently areas of degeneration may be found in the optic thalamus and in some cases in the gray matter surrounding the third ventricle. Lissauer states that in a few of the atypical cases the pathological changes are most marked in this subcortical centre.

Nerve-Cell Changes.[51]—Inspection of the cortex with a low-power lens in stained specimens often shows a notable disappearance of cells. Where the atrophy is marked, if the section is studied under the low power of the microscope the normal columnar arrangement of the cells in rows is seen to be broken up, while practically all conceivable changes are observed in the cells. These have been described in detail by Hoch.[52]

The nerve-cell changes may be described as (1) acute, characterized by swelling of the cell-body, which tends to stain diffusely, and an increase in the size of the nucleus, and finally a more or less disintegration of the whole; (2) a chronic form, in which the axis-cylinders show a marked tendency to stain more or less deeply, and a granular appearance of the body, with a tendency to stain faintly; (3) a cell sclerosis, another chronic change frequently met with, in which the processes become tortuous, stain deeply; the cell-bodies have a shrunken

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[51] Binswanger: Die pathologische Histologie der Grosshirnrinden-Erkrankungen bei der allgemeinen progressiven Paralyse, 1893. Nissl: Archiv f. Psych., Bd. xxviii, S. 989. Heilbronner: Allgem. Zeschr. f. Psych., Bd. liii, S. 172.

[52] Hoch, A.: On Changes in the Nerve-Cells of the Cortex in a Case of Acute Delirium and a Case of Delirium Tremens. Am. Journ. Insan., vol. lv, 1898.

DESCRIPTION OF PLATE XIII

FIG. 1. – Cross-section cerebral cortex (gyrus centralis posterior, culmen). Normal adult male.

FIG. 2.—Same area from a case of dementia paralytica. The drawings include four external layers of cortex: I, Lamina zonalis. II, Lamina granularis externa. III, Lamina pyramidalis. IV, Lamina granularis interna.

The nerve-cells in Fig. 1 show plainly the fibrillary structure and great numbers of finely branching dendrites. The very long pointed processes are particularly prominent in the large pyramidal cell layer. The nucleus is not stained. The portion of field not occupied by cells is filled in by a felting (Filz) of very fine medullated and non-medullated nerve-fibres and branching dendrites.

In Fig. 2 it will be noticed that the nerve-cells are much closer together, while the cell bodies have an homogeneous dark appearance with only an occasional suggestion of the normal fibrillary structure. The dendrites are either absent or are shortened, tortuous, and swollen. The extracellular felting, particularly in layer I, is markedly thinner. The disappearance of elements from the field includes the finest structures. If this section is compared with one stained by the Weigert method, the appearance in the field of the large number of fibres in spite of the severe affection of the cellular elements is very striking.



FIG. 1.

FIG. 2.

PLATE XIV



FIG. 1.—Neural plate of Rat (cf. p. 1) in the gutter-shaped condition.
FIG. 2.—Ganglion of same stage. Case of dominant primitive.

The above drawings were made from stained preparations kindly lent by Drs. Bell & Ranvier and Retzius of the Neurological Institute, Berlin. The sections were stained by the Weigert-Pal, Kultschitzky, Flesch methods. Figs. 1 and 2, Zeiss, oc. 2. Figs. 3 and 4, Immersion, homog. $\frac{1}{12}$.

appearance, and many of them seem to be partially filled with a bright yellow pigment.

Whether the acute changes stand in direct relationship to the paretic process, or whether they develop in the terminal stage, as the result of infections or of the acute symptoms arising from complications developing in connection with the kidneys, heart, lungs, or other internal viscera, it is difficult to say. It may be laid down as a general rule that in other diseases where similar cell changes are observed—in senile dementia and epilepsy—they are frequently so widespread as to render it improbable that the disease process is cortical in origin. In addition to these changes, it is not uncommon to find small or, more rarely, large areas of sclerosis scattered through the central nervous system.

The Neuroglia Changes.—Anomalies in the structure of the neuroglia are met with in every case of dementia paralytica. The findings in the acute and chronic cases differ essentially. Generally there is a proliferation of the fibres, which is much more marked in the latter than in the former. As a rule, there is an increase in the subpial felting, not uniform, but more marked in some places than in others. Bands of fibres may be noticed along the blood-vessels. The abnormal growth of fibres is frequently excessive along the ependymal lining of the central gray masses. In the acute cases the cells appear as if they were reacting to some stimulus; there is a marked increase of the protoplasm surrounding the nucleus, so that not infrequently the cell-body reaches large dimensions. In the case from which the illustration was taken quantities of large spider-cells were found in the molecular layer, being most numerous in the outer half. A few were found along the inner portions of the layer, where it comes into contact with the small pyramidal cells. These monster cells vary in size. Not only is the protoplasm surrounding the nucleus hypertrophic, but in many instances the nuclei themselves are larger and paler in color than normal. The nuclei are altered in shape, some are oval, others present a notched appearance, while still others are sausage-shaped or have a dumb-bell form. Great numbers

of these large cells may be present, and under this condition the increase of the neuroglia fibres is not well marked. The formation of fibres belongs to a later stage. Many authorities hold that the hypertrophic glia-cells separate themselves from the fibres, and that the former, under the influence of a chemotactic stimulus, wander towards the source of greatest irritation. In the acute stages evidences of cell mitosis are frequently observed. The neuroglia cells not infrequently surround the nerve-elements (the so-called accompanying or "Trabant" cells). In some sections the appearance of an actual encroachment of the glia upon the nerve-cells is met with. These are the factors which suggested to Marinesco the term neuronophagia. Occasionally a monster cell shows a double nucleus. The terminal stage in the transformation of the cell is apparently the production of fibres. In the more chronic cases, as has already been said, the increase of fibres is the most noticeable finding in connection with the neuroglia changes. Here we find few, if any, of the large cells. The subpial felting is, as a rule, greatly increased. The fibres in the earlier stages are sometimes thick and have a swollen appearance. In some instances we meet with amyloid bodies. Rollich believes that these are formed in the glia-cells. In the case described[53] by Rusk and the author, the former referred to the presence of certain spherical bodies with regular outlines and of a homogeneous nature, which stained indifferently with any acid or basic stain and readily decolorized, but did not give the reaction for amyloid or fat. The unusually important rôle played by the neuroglia nuclei has been pointed out by Nissl.[54]

Lesions in the sympathetic probably occur in all the cases, and unquestionably give rise to many of the symptoms that occur. Recently the solar plexus has been carefully studied in a number of cases by Laignel and Lavastine,[55] who have described a variety of lesions which were more or less constant.

[53] Op. cit.

[54] Arch. f. Psych., Bd. xxxii, H. 2.

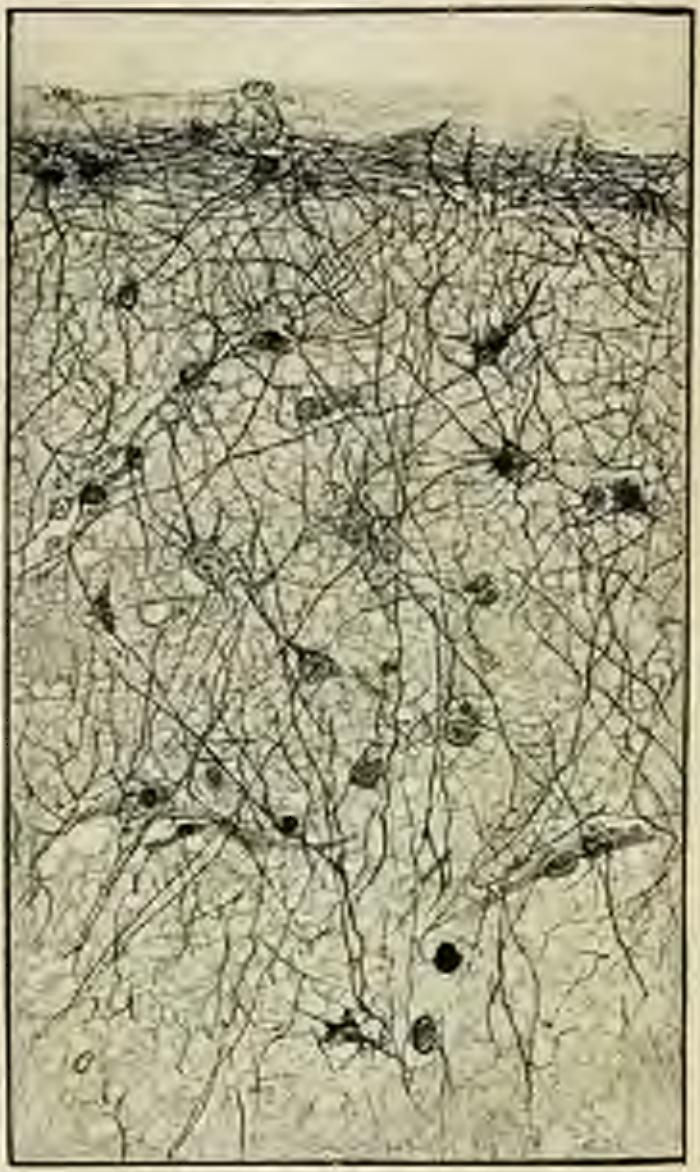
[55] Hintel. Pathologie du Plexus Solaire chez les paralytiques généraux. Revue Neurologique, 1903, Août, p. 827.

PLATE XV



Giant tubular cells, cerebral cortex (Bastian's stain). × 300. (From a case of epilepsia mentis.)

PLATE XVI



Outer layer of cerebral cortex. Case of acute paresis. Golgi method. (Cajal's) spider cells. Bonda's ammonia silver (Penfield coll. no. 30, slide 1 mm.)

Among the more noticeable were a pigmented atrophy and an interstitial sclerosis. The cellular changes seemed to be secondary to the sclerotic processes.

The Vascular Changes.—The vascular changes are, as a rule, pronounced, particularly in the smaller blood-vessels. According to certain observers changes occur in the arteries and veins preceding the lesions in the lymph-channels. The thickening of the membranes, due to chronic inflammatory processes, causes a dilatation of the subarachnoidal lymph-spaces and a damming up of the venous blood supply, so that His's epicerebral space is obliterated and marked changes in the pial vessels, as well as in the small arterioles entering the superficial layer of the cortex, follow. There may be a marked increase in the nuclei of the adventitia. The changes are not confined to the arteries, but are also noticeable in the veins. There is a dilatation of the intra- and extra-vascular lymph-spaces. Warda[38] has found that the hyaline degeneration extends even to the capillaries of the cortex, and associated with this change there is a marked increase of the adventitial nuclei as well as of the cells forming the endothelial lining. In many instances there is a marked perivascular infiltration of the tissues. The adventitial spaces are dilated, red and white blood-cells being found in the perivascular spaces. Nonne holds that the vascular changes of paresis do not correspond with the picture of Heubner's endarteritis, which is considered by many the crucial pathological test of the existence of syphilis. In the acute cases it is extremely difficult to say whether the vascular changes precede or are secondary to the alterations in the neural elements. In a few cases there is an increase in the intimal constituents that may go on to a complete occlusion of the vessel. Not infrequently the vessels show small aneurysmal dilatations, while the evidences of the formation of new vessels is, as a rule, fairly well marked and more striking in the outer layer of the cortex. Vogt and Nissl have called attention to the occurrence of epithelioid Marschalko plasma-cells in the vessels. This finding

[38] Ztschr. f. Nervenheilk., Bd. xii.

is represented in the accompanying illustration. The appearance of these cells indicates the existence of chronic inflammatory changes, so that to a limited extent they afford us important aid in distinguishing the paretic processes from the cortical changes observed in certain psychoses. Of course, this does not apply to the brain diseases which are commonly referred to as organic. Havet[57] does not believe that the plasma-cells are in any sense pathognomonic of the paretic process. Sections obtained from the cerebral cortex in the various autopsies performed at the Sheppard and Enoch Pratt Hospital were examined by Rusk and Dunton with a view to this point, and their results tend to confirm the observations of Vogt. Plasma-cells were found in the cortical vessels in cases which ran an acute or subacute course, but in material from protracted cases they were not demonstrable. They have not been observed in cases of dementia præcox or manic-depressive insanity, but were seen in one case of a young boy who had been subject to epileptiform attacks for a number of years, although the history did not permit a positive clinical diagnosis. Weber believes that the plasma-cells spring from the connective tissue, and that their presence indicates a more extensive inflammatory process than when they are absent. Mahaim found in certain cases numerous cells having a round nucleus and irregular structure, the protoplasm containing vacuoles, the body being sometimes large, in other instances small, and containing granulations of different sizes which stained deeply.

As was mentioned when discussing the clinical symptoms, cases of paresis are not rare in which the paretic process is much more pronounced in certain areas of the cortical surface, and this localization may give rise to focal symptoms. Adolf Meyer has reported the case of a man forty-two years of age, who had difficulty in the use of the left arm, and at the same time mentally showed slight expansiveness. As the case progressed an

[57] Bulletin de l'Acad. de Médecine de Belgique, IV. série, tome xvi No. 7, Séance du 26 Juillet, 1902

PLATE XVII



anæsthesia of central origin of the left arm was found to be present. Associated with these symptoms there were slow, incoördinated, and involuntary movements in this arm, a gradual development of rigidity of the musculature on the whole left side, and a left hemiplegia. At autopsy the posterior part of the right hemisphere was found to be the seat of the paretic process. No focal lesions were present. There was marked atrophy of the cortex and a distention of the ventricles with gliosis of the left portion of the cerebellum. Similar cases have been described by Hoch. In this connection Bleuler [38] has reported an instance of unilateral delirium occurring during the course of general paresis.

These cases are thought by some observers to be essentially different from those in which the paralytic process is complicated by a focal lesion. In view of the more recent investigations of Kaes [39] and others, which indicate that in at least a majority of the cases the pathological process is generalized and not local, we are unable to explain the occurrence and significance of these atypical forms. Probably, however, certain of the supposed atypical unilateral cases of general paresis are complicated by arterio-sclerosis. The apparent localization of the paretic process to one cortical area is explicable on the ground that there is a vascular lesion similar to that described by Alzheimer, giving rise to an atrophy and reaction in the nerve and neuroglia tissue difficult to differentiate from the changes occurring during paresis. These arterio-sclerotic lesions may precede the development of the paretic process. Further investigation is needed in relation to these points.

For the exact nature of the pathological process different explanations have been offered. Nissl [40] affirms that paresis is a chronic inflammation of the central nervous system, and that the facts justify the attempted differentiation between this disorder and other psychoses on a histo-pathological basis. The

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[38] Halbseitiges Delirium. Psych.-neurol. Wchnschr., 1902, 34.
[39] Op. cit.
[40] Neurolog. Centralbl., 1902, December 16, Nr. 24.

lesions present indicate an inflammation, which is characterized by a marked infiltration of the adventitial sheaths, with the occurrence of the plasma-cells. From these findings the deduction is made that an inflammatory process is the basis of the changes, and that the latter can not be the result of a simple degeneration.

As the result of two hundred autopsies performed by Vigouroux and Laignel-Lavastine[41] on patients who had died from dementia paralytica, these observers concluded that the pathological processes could be divided into three categories: (1) cases in which there was a general cellular infiltration of the meninges and cortex not accompanied with marked degenerative lesions of the arteries; (2) instances of marked hyaline degeneration and pigmentation in addition to the infiltration, and (3) cases characterized by marked degeneration of the arteries with or without a discrete infiltration.

More recently Nissl[42] has attempted to draw even sharper lines between the histo-pathological changes of cerebral lues and those that occur in paresis. As has already been mentioned, the important point in the differentiation is to be sought not in single lesions, but in the totality of the findings. The paretic process may be regarded as diffuse in the sense that changes are present throughout the whole cortical region, but those which are specific of paresis need not show an equal intensity in all the different areas, but are in a sense localized. This idea renders it possible to draw a distinction between the typical and atypical cases. A *résumé* of the changes which may be regarded as specific of general paresis is as follows:

(1) A marked disappearance of the tangential and supraradiary fibres.

(2) An increase and thickening of the glia fibres, particularly the subpial felting, as well as of the bands of fibres around the blood-vessels; a considerable increase in the number of cells

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[41] Revue Neurol., Août 31, 1903.

[42] Nissl: Zur Lehre von der Hirnlues. Centralbl. f. Nervenheilk. u. Psych., 1903, December 15, Nr. 167, S. 788.

PLATE XVIII

TABLE, BASED ON THE RESULTS OF ALZHEIMER'S OBSERVATIONS, GIVING IMPORTANT POINTS IN DIFFERENTIATING THE CHANGES IN THE FOLLOWING CONDITIONS FROM THOSE OBSERVED IN DEMENTIA PARALYTICA.

Lues of Meninges and Brain.	Arteriosclerotic Cerebral Atrophy.	Alcoholic Dementia.	Senile Dementia.
Greatest changes in the pia; infiltration of tissue as well as walls of vessels with lymphocytes. Infiltration runs easily disintegrated. From the pia the disease spreads to the brain tissue, causing excessive infiltration of the lymph-canals with lymphocytes. After destruction of the nerve-elements the superficial zone is obliterated by the union of the pial and cortical tissue. The meningitic process may remain localised.	Focal disease—areas in cortex left intact (in paresis opposite normal areas). No extensive infiltration of lymph-canals with lymphocytes and plasma-cells. Infiltration only in areas of hæmorrhage or softening. Presence of compound granular cells ("Kiechen" or "Gitter" cells). These are generally absent in paresis except in hæmorrhagic or infiltrated areas. No "system-degeneration" in the spinal cord.	Pia thickening of hyperplastic not infiltrative nature. No excessive cortical infiltration of lymph-spaces. Vessels show regressive changes. Disappearance of nerve-cells and medullated fibres not so excessive as in paresis. New formation of glia fibres moderate, less than in paresis. Only rarely "system-degeneration" in the spinal cord, but generally marked changes in the peripheral nervous system.	Vascular changes of a regressive nature. Infiltration of lymph-canals absent. Increase of glia fibres generally moderate, but formation of pigment with subsequent degeneration of the same in cell-body. In the nerve-cells either a pigmentous degeneration or a degeneration characterised by a peculiar pale color of the cells. Preservation of the normal arrangement of the cells. Senile changes in various organs. No "system-degeneration" in the cord.

PLATE XIX



Red cells from the cornea in purpura.

FIG. 1.—Isolated forms. In the one to the right is shown a pigmentary deposit in the protoplasm of the longer polar process.

FIG. 2.—Capillary containing plasma cells. A mural element (adventitial) lies alongside of, but entirely separated from, the vessel wall. This element has the morphological characteristics of the red cells which are scattered through the gray matter.

FIG. 3.—Mural element separating itself from the vessel wall, but not yet entirely free.

Drawings from sections stained with polychrome methylene-blue. Zeiss, homog. immers. 1/12. Ocular iv.

with progressive changes in the nuclei and a synchronous thickening and increase in the size of the cell-body, and a differentiation particularly of thick glia fibres out of the protoplasm.

(3) The appearance of various lesions in the nerve-cell.

(4) The adventitial spaces, particularly of the middle-sized vessels, contain plasma-cells, lymphocytes, and occasionally mast-cells. In the adventitial sheath there is nearly always pigmentation.

(5) A formation of new vessels with numerous connections between the glia protoplasm and the vessel walls.

(6) The so-called Rods (Stäbchenzellen) are not so numerous in any other process.

(7) The characteristic changes in the spinal cord.

The syphilitic process may be differentiated as follows:

(1) A relatively slight disappearance of the tangential and supra-radiary fibres.

(2) A different character in the glia changes from that noticed in general paresis. The throwing-off of the glia fibres is less marked, and the large, thick fibres are not common. The bands of fibres about the vessel walls are less prominent, but the thick processes connecting the cells with the vessel walls are more numerous. The nuclei are enormously increased and reach a colossal size. The so-called typical glia (gemästete) cells are absent, and the cells themselves show more frequent regressive changes.

(3) The nerve-cells, as a rule, show a greater tendency towards swelling and disintegration of the cell-body.

(4) There is at the most only a very slight suggestion of the adventitial infiltration, with only an occasional mast-cell.

(5) A marked proliferation of the cells of the intima, which show an inclination to form small vascular lumina inside of the original vessel. The elastic fibres split into two or even four or five layers. The formation of new vessels is the most characteristic feature in the picture. The cells in the vessel walls do not show any fat pigment. The capillaries frequently bore through the glia protoplasm.

(6) Rods (Stäbchenzellen) are rare.

(7) The spinal cord shows no typical degeneration.

A careful analysis and comparison of all the facts seems to justify the view that dementia paralytica is a diffuse toxic process affecting nearly all the organs in the body, but showing a marked predilection for the central nervous system. In fact, we have a series of phenomena somewhat analogous, as some observers have suggested, to the cachexias following the destruction of the thyroid or suprarenal bodies.

It is interesting to note that Watson,[83] in studying the central nervous system of cases of juvenile general paralysis, comes to the conclusion that the lesions are not merely the result of impaired development, but of some active process.

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[83] The Pathology and Morbid Histology of Juvenile General Paralysis. Arch. of Neurol., ii, 1903.

CHAPTER XVI

THE EPILEPSY GROUP[1]

Epilepsy is a disease characterized by disturbances in consciousness of varying degrees of intensity, with or without convulsive seizures. In the majority of cases the changes in the character of the individual noticeable between the attacks are almost specific and may manifest themselves in either a temporary or a permanent mental aberration. As Binswanger has shown,[2] in the narrower sense only those cases may with certainty be called epilepsy in which the symptoms are characterized by chronicity and are indicative of an interference with the general functions of the central nervous system. At the outset a difficulty in regard to the use of the word epilepsy is experienced, as the study of the condition to which the term "psychic epilepsy" has been applied includes a variety of symptoms. The stable epileptic manifestations are referred to as changes in character or disposition, while the episodic forms are associated with the attacks or their equivalents. Hoffmann, who, in 1862, was the first to use this expression, affirmed that it was possible to recognize the disorder in cases in which the characteristic motor anomalies were altogether absent. On the other hand, a reaction has taken place, and the general consensus of opinion now favors the view that in the absence of the specific motor symptoms the diagnosis of epilepsy shall be made with a considerable degree of mental reservation. The observations of Hoche[3] and others have served to emphasize the extreme

[1] Gowers: Epilepsy and Other Chronic Convulsive Diseases. London, 1901. Dutil, A.: Troubles mentaux dans l'épilepsie. Ballet, Traité de pathol. mentale. Paris, 1903. Starr, M. Allen: Is Epilepsy a Functional Disease? Journ. Nerv. and Ment. Dis., March, 1904.

[2] Die Epilepsie. Specielle Pathologie und Therapie. Nothnagel. Wien, 1899.

[3] Hoche, A.: Die Differentialdiagnose zwischen Epilepsie und Hysterie. Berlin, 1902, A. Hirschwald.

difficulty that frequently exists in differentiating cases of severe hysteria from epilepsy, and Aschaffenburg has recently carefully examined a number of cases with the view of determining whether in many of the presumed instances of psychic epilepsy a positive diagnosis is justifiable. The latter, although admitting the relative diagnostic importance of such symptoms as headache, profuse sweating, dilatation of the pupils, impaired reactions, the increase in the rapidity of the pulse, the marked tremor, blanching or reddening of the face, the severe attacks of diarrhœa, etc., maintains that on account of the present limitations of our knowledge the question cannot by any means always be answered positively in the affirmative. After these qualifying statements we may proceed to the consideration of the clinical forms of alienation associated with this neurosis.

The mental disturbances may be conveniently arranged in four main groups: (1) those that precede the attacks,—the auræ; (2) those that develop during the height of the seizure,—the psychic equivalents of the motor symptoms; (3) the sequelæ, or post-epileptic phenomena; these three groups include the symptoms that are episodic; (4) those that are more or less constant during the intervals between the attacks and bring about anomalies in thought and action that in a measure show themselves in the character of the individual. These permanent changes vary in degree from mere eccentricities of character to the most pronounced forms of dementia.

Before proceeding to the discussion of the different groups, a word may be said in passing as to the general character of the mental symptoms. Thus we may have forms characterized by periods of (*a*) excitement, (*b*) depression, and (*c*) mixed forms, in all of which impulses may play an important rôle. The excitement may take the form of simple mania lasting for only a few minutes or in some instances for months or even years, or it may be of extreme violence (manie furieuse).

The impulsions are characterized by their sudden, inexplicable appearance and their independence of external circumstances. They are very varied in character,—suicidal, homicidal, dipsomaniacal, pyromaniacal, potomaniacal,—or

they may be associated with various forms of automatism and exhibitionism.

(1) *Aura* may be classified as psychic, sensorial, motor, and vasomotor (Reynolds). Among the more important of the disturbances in the mental activities are the anomalies of emotion. A patient may be overwhelmed by states of anxiety which are intimately associated with changes in the organic sensations. Frequently he is able to localize the accompanying disturbances in the head, breast, or abdomen. Not infrequently the onset of the anxiety is sudden and to the patient inexplicable, and at times this sensation develops into a definite fear. The former may be accounted for in the majority of cases by the comparatively short duration of the phenomenon, while in the cases in which the aurae last longer anxiety may crystallize into a definite, well-defined phobia, and when this is the case, in addition to the changes in the organic sensations, hallucinations and delusions may occur, which often form the basis of an anomalous affective state. Not uncommonly the first symptom of an approaching epileptic seizure is a profound mental depression, the patients sinking deeper and deeper into the slough of despond until they are overwhelmed by the seizure. Binswanger reports an instance in which the period of depression was followed by one of marked exaltation amounting to euphoria. As a rule, during the prodromal stage the patient is apt to be excessively irritable, brooks no interference; he is subject to violent outbursts of temper and shows a high degree of emotional instability. The disturbances of the intellectual faculties are either the result of marked inhibition, in which case there is complete interference with certain of the mental processes, or there may be an apparent increase in the intensity and rapidity of the psychical reflexes. In the former case there is retardation and a marked delay in the working up and elaboration of every stimulus that impinges upon the cerebral cortex, not only in the sense areas, but the defects are even more general, including the functions of associative memory. Sometimes the amnesia amounts to a general impairment of memory, while in other instances it is more localized, the defects

being checkered in character and certain islands of memory remaining intact. The patients frequently describe this temporary mental enfeeblement by declaring that they have difficulty in thinking, that their thoughts become obscure, that they are unable to direct their attention, and in many ways apparently recognize the general sluggishness of all the cerebral processes. The delay in the association of ideas may be easily shown by means of the simple clinical tests to which allusion is made in the first section of the book. In the antithetical state the mental reflexes sometimes seem to be short-circuited as it were, and there is such a quick response to any and every stimulus that there seems to be an increase in the mentality; nevertheless, on careful examination the field of consciousness is found to be limited, the apparent augmentation in the psychic activity being merely due to the promptness of the simpler psychic reaction and not to any greater elaboration in the working up of the stimulus.

Among the psychic aura imperative ideas and obsessions play an important rôle. Patients not infrequently complain that during a certain period preceding the attack they are distressed by the rapidity and intensity with which their brain seems to act. Certain obsessions shoot up into the field of consciousness and serve to increase their nervousness, sometimes giving rise to definite states of anxiety or fear. The aura connected with the special senses are frequent and varied in character (Gowers). In the visual field patients frequently suffer from elementary hallucinations; they see bright lights, occasionally colored, particularly red. Associated with these elementary hallucinations are those of a more complex character,—visions of animals or human figures. Not infrequently patients describe these phenomena with great accuracy and minuteness. As a rule, the hallucinations and delusions are grotesque and bizarre in character. The elementary auditory hallucinations belong rather to the more complex forms, which are less frequently encountered.

(2) *Mental Symptoms occurring during the Height of the Attack.*—Instead of the convulsive seizures characterized by

tonic or clonic spasms with marked disturbances in consciousness, there may occur what are termed psychic equivalent attacks. These may be divided categorically into three groups: (*a*) transitory disturbances in consciousness, lasting for a few seconds or minutes; (*b*) the same psychical defect associated with slight motor involvement, such as turning of the head, temporary squint, etc.; (*c*) clouding of consciousness associated with affective emotional disorders, accompanied by anomalous automatic impulsive acts.[1]

Frequently it is impossible to recognize with certainty these transitory disturbances as epileptiform, and it is only after their recurrence and when the probability of the existence of some organic brain lesion has been eliminated that the diagnosis can be determined. There is no form of mental aberration which is more commonly ignored or not recognized than the milder types of the psychoses which belong to latent epilepsy, as it is termed (*larvirte epilepsie*). In the less severe forms of the disease—*petit mal intellectuel*—the patients not infrequently pass from a period of depression to one of anxiety, in which they become irritable and impulsive. Not infrequently during these attacks the sufferer may even become so desperate that he attempts suicide. As a rule, the subjects of these attacks retain some insight into their condition, and often recognize that they are the subjects of obsessions or insane ideas, or wander about aimlessly, overwhelmed by anxiety. The attack itself lasts from a few seconds to several minutes.

The more severe attack—*grand mal intellectuel*—may be preceded by a period during which the motor discharge is replaced by severe emotional storms, marked mental depression, intense anger, or great anxiety, associated with hallucinations of various forms. Aschaffenburg noted the occurrence of attacks of mental depression in 78 per cent. of the cases of psychic epilepsy. This symptom was practically uncomplicated in some cases, while in others it was associated with anxiety, optic hallucinations, motor restlessness, and boisterous aggressive-

[1] V. Krafft-Ebing: Lehrbuch der Psychiatrie, 7te Auflage, 1903, S. 486.

ness. Frequently the diagnosis is only possible when the attack has passed and the patient falls into a deep sleep. Often there is a period preceding the acme which is characterized by primary incoherence and marked dissociation of thought, while in other instances there may be stupor, broken by periods of intense excitement, during which the conduct of the patient is dictated by obsessions and impulses of such a dominating character that the individual brooks no interference, destroys his clothing, breaks the furniture, rushes heedlessly about, injures those who come across his path, and becomes a source of the greatest danger not only to himself, but to those about him. It is not improbable that a symptom-complex that in some measure suggests the typical flight of ideas as seen in manic excitement may be occasionally noted in these transitory periods of aberration occurring in epileptics.[5] As a rule, the excessive narrowing in the field of consciousness with the tendency to verbigeration, as well as the boisterous rage of the epileptic, serve to distinguish this apparent fictitious flight from that seen in manic-depressive states. It is only in those cases of epileptic mania in which the motor restlessness is excessive and the emotional storm is very intense that this apparent flight really resembles the true maniacal type.

In some instances speech compulsion and verbigeration rapidly alternate with periods of mutism, a combination of symptoms that is somewhat analogous to conditions that are marked in hysteria and in precocious dements.

Orientation, as would be expected, is markedly impaired. The hallucinations vary greatly in number and intensity. As a rule, the visual and auditory predominate, but the functions of touch, taste, and smell may be similarly affected. The patient's relation to the external world is almost completely severed, and definite motives for action are replaced by obsessions and fallacious sense perceptions, which, as a rule, take on great sensory vividness and a variety of forms.

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[5] Heilbronner: Ueber epileptische Manie nebst Bemerkungen über die Dämmerzustände.

Especially common are grotesque or frightful apparitions, whose approach overwhelms the patient with fear and intense anxiety,—curious animals, monsters of all sorts, devils, frightful-looking personages, who attempt murder, rape, etc. Not infrequently the fallacious sense perceptions are so vivid and of such a gruesome and terrifying character as to give rise to states of intense mental anguish. Patients are threatened by some dreadful incubus, are confronted by the tortures of hell, see visions and dream dreams more terrible in their content than the sights described in the Inferno. Sometimes the visions are of a different character. Devils are replaced by angels, the patients have communication with heaven, and, as a result of these pleasant revelations, marked euphoria may be present, the patients giving expression to their feelings by jubilant shouts or by decking themselves in fancy dress. The allopsychic disorientation of the patient in cases of this character may in part be referable to hallucinations and delusions, but there are others where this sensory vividness is less intense, and then the disorientation is due to other causes.

As a rule, the number of representations in consciousness is decidedly limited. This in a measure undoubtedly explains the intensity of certain retained sensations and the reflex effect which they seem to exert on the conduct of the individual. In these severe cases the memory, as may be inferred, is markedly impaired, although occasionally single and isolated events that occur during the attack are remembered.

Essentially characteristic of psychic epilepsy is the so-called dream state, in which we see evidences of considerable interference with the cortical functions, and this in turn is a potent factor in the production of the allopsychic disorientation. As Wernicke has pointed out,[6] the disorientation may be so excessive as to amount to asymbolism.

A second important characteristic of the dream state is the tendency shown by certain cortical functions when once initiated to persevere (perseveration). Patients repeat the

[6] Op. cit.

same words in reply to widely different questions, and it is frequently necessary to greatly increase the intensity of the auditory stimulus before a change in the reply is given. This tendency is also shown in the repetition of certain acts and in the recurrence and persistence of certain ideas or groups of ideas.

(3) The *post-epileptic mental disturbances* may in a measure resemble those which precede the attack. In some instances they may be regarded as merely protracted auræ or as antecedents of the stuporous state. Just as in the period preceding the attack, so following it, we may have marked emotional disturbances, pronounced anxiety, psychomotor retardation, periods characterized by hallucinosis and the cropping up of imperative ideas and obsessions. In this period there may also be various degrees of mental apathy, with or without the automatic and impulsive acts. At times there occur the well-known dream-like states, lasting from a few seconds to several hours, days, or even weeks, or periods of marked excitement, with vivid and persistent hallucinations and very great incoherence, similar to those already described may intervene. The protracted stuporous states are much more common at this time than in the initial stage or during the so-called equivalent period. Associated with the impaired mentality there may at times be marked mutism during which the loss of consciousness is only partial. Not infrequently cataleptic phenomena are noted, and these may give rise to great difficulty in differentiating the case from one of dementia præcox. It should not be forgotten that the post-epileptic mental disturbance sometimes follows single and ill-defined attacks or recurs only after the lapse of long intervals. When this is the case there is naturally great difficulty in establishing the diagnosis. Occasionally an abortive epileptiform attack is followed by marked disturbances in consciousness and considerable amnesia, a condition that may give rise to questions of great forensic importance. The duration of unconsciousness, both during the attack itself and in the terminal stage, varies greatly. In some instances the period of total amnesia is synchronous with that of the stupor or coma, while in others the patient's memory may be so de-

fective as to be a perfect blank, not only for all events during the height of the attack, but for a considerable period prior to the onset of the first pronounced symptoms. In these cases the post-epileptic stage can not be well differentiated from the equivalent period. Thus one of my patients remembered distinctly leaving his home on a certain morning to go to his place of business. He had not proceeded far when he suddenly lost consciousness, and when he regained it he found himself under arrest, accused of having broken a large plate-glass window in a store at some distance from the spot where he lost consciousness.

The forensic importance of similar attacks is very great. Patients often become violent, brutal, and, on account of their recklessness and apparent indifference to pain, can be restrained only by the exercise of great force. Siemerling reports the case of a patient who, during an attack characterized by great excitement and confusion, with marked automatic impulsive acts, had once been confined in a hospital for the insane. Three years later, without any apparent motive, this same man killed a woman. Witnesses to the act immediately took the man into custody. During the examination that followed the patient remained perfectly quiet, showed no appreciation of the deed, and made no attempt to escape. Gradually he awakened from the dream-like state into which he had fallen, and at first affirmed that he had not committed any crime, but finally admitted the commission of the deed, justifying it, however, on the ground that it was done in response to a command of God. During the six weeks in which he was under observation in the Charité the patient suffered from transitory disturbances of consciousness, with hallucinations associated with marked periods of anxiety. The memory was exceedingly defective. When the attack finally subsided the patient affirmed that on the day on which he had committed the murder he remembered having had a severe headache and the sudden and inexplicable appearance of the idea that he must immediately buy a razor. On the evening of the same day he went to Berlin to visit his brother. Soon after arriving in the city his memory became a

perfect blank, with the exception that he vaguely remembered attacking some person, being actuated only by a blind impulse.

This is an example of a group of cases that not infrequently come under observation. Patients of this class during these periods of unconsciousness (ambulatory automatism) have been known to go on long journeys, to commit theft, arson, or assault, and display a marked tendency to exhibitionism and vagabondage.

Buchholtz called attention to a comparatively small group of cases in which the insane ideas develop during the equivalent period, become systematized, and persist for long periods of time. These are the instances referred to in the literature as paranoiic states developing upon an epileptic basis.

(4) In the majority of cases after the epilepsy has existed for a considerable period of time a more or less pronounced form of dementia makes its appearance. Gradually the interests of the individual become more or less limited and monotonous. The mental processes are considerably delayed, marked lengthening in the reaction time taking place. The defects in memory become more noticeable, and the intellectual and ethical deficiencies are so intensified that finally in the severest forms of the disease the patients are unable to show any evidence of cerebration. In these cases the articulation of speech may be seriously impaired, and the individual is reduced to a state which is comparable to some of the lowest forms of idiocy. The earlier in life the epileptic attacks appear, the more apt is the dementia to become of a pronounced character.

Differential Diagnosis.—As has already been pointed out, there is often great difficulty in distinguishing mental disorders associated with epilepsy from those occurring during the course of other psychoses. This is particularly true in regard to the various forms of hysteria. It should also be remembered that hysterical symptoms may obscure those of genuine epilepsy.[7] Sufficient has already been said in the

[7] Hermann, J. S.: Ueber spätauftretende hysterische Anfälle bei Epileptikern. Monatsschr. f. Psych. u. Neurol., xiii. Brasz u. Falkenberg: Hysterie und Epilepsie. Archiv f. Psych., Bd. xxxvii, Hft. 2, 1904.

chapter on *hysteria* to point out the symptoms that may be considered of importance in differentiating the two diseases. The vertigo without disturbances in consciousness, which frequently occurs in patients suffering from gastric or cardiac disease, is easily differentiated from true attacks of epilepsy. In the prodromal stage of *dementia paralytica*, the senile psychoses, or during the onset of the acute delirium, we not infrequently meet with states of apprehensiveness, motor restlessness, irritability associated with visual and auditory hallucinations, combined with outbreaks of anger and suicidal or homicidal attempts, which may temporarily resemble epileptiform attacks. The subsequent development of the case, as well as the characteristic visual symptoms in a case of paresis, aid in establishing a diagnosis. Not infrequently in individuals who are afflicted with *gout* we meet with epileptiform attacks which present many difficulties in the differentiation from true epilepsy, but in the former the prognosis is very much better than in cases in which we have the hallucinations, the impulsive acts, and the memory disturbances described as characteristic of the confusional states occurring during epilepsy. Some observers affirm that the more or less sudden onset and disappearance of alienation, the peculiar type of the hallucinations, the impulsive acts, and the memory defects should at once arouse suspicions as to the existence of this malady. Others maintain that if epilepsy is present the insane ideas are either of a persecutory or boastful character and that the hallucinations generally refer to religious subjects. Kraepelin, on the other hand, has emphasized the apprehensive, angry character of the patients suffering from epileptic mania, while Bonhoeffer thinks that a hypochondriacal coloring of the insane ideas with marked disturbances of organic sensations and hallucinations of smell and taste are alone specific. The attempt to establish a safe criterion based upon the analysis of the physical symptoms is equally unsatisfactory. The absence of the light reflex, which sometimes occurs and may persist for twenty-four hours, is frequently noticed in other conditions. Probably somewhat more important are the dilated pupils with

a sluggish reaction for light. It is not improbable, as Raecke and others have pointed out, that the drunken character of the walk, the general tremor and irregular incoördinated movements, reminding one of chorea or myoclonia, deserve more careful attention. The speech disturbances, including either marked disturbance of articulation with a tendency to scan and stammer, and in other instances pronounced aphasic symptoms, with echolalia and verbigeration, have received careful study. Pick[4] has indicated the sequence of what he calls the re-evolution of speech following the epileptic attack. At first there is complete word deafness, and then, although the patient is unable to comprehend the sense of the words, he can repeat them mechanically. This period is followed at varying intervals by the return of spontaneous speech.

Frequently, if no history of the patient has been obtained, there is some difficulty in deciding whether a case is one of *manic-depressive insanity* or the mania of epilepsy. Formerly it was believed that the typical flight of ideas was characteristic solely of the excited periods of manic-depressive insanity, but recently Heilbronner[5] has called attention to the fact that a syndrome closely resembling this may occur in true epileptic mania. The differential diagnosis may be still further complicated by the appearance of euphoria, distractibility, motor restlessness, and speech compulsion. We believe, however, that this combination of symptoms is of comparatively infrequent occurrence, and such a condition is apt to persist only in cases of true mania. The differential diagnosis is sometimes difficult to make from cases of *true mania* where the patient is exceedingly aggressive, boisterous, and brutal. As a rule, the epileptic characteristics, such as marked apprehensiveness, states of ecstasy, and acts which are the result of blind impulses, sooner or later become so prominent in the clinical

[4] Ueber die sogen. Revolution (H. Jackson) nach epileptischen Anfällen nebst Bemerkungen über transitorische Worttaubheit. Arch. f. Psych., xxii, S. 790.

[5] Heilbronner, Karl: Ueber epileptische Manie nebst Bemerkungen über die Ideenflucht. Monatsschr. f. Psych. u. Neurol., xiii.

picture as to be easily recognized. Sometimes patients suffering from catatonic *excitement* may suggest the various forms of epileptic mania. The differentiation is frequently complicated by the appearance of perseveration. This symptom, which frequently occurs in cases of dementia præcox, is also common in epilepsy. Bonhoeffer[10] has shown that the capacity of epileptics for association is particularly limited, and that in addition to this they show a marked inclination to repeat certain words. On this account the speech of patients may be particularly monotonous, and they may repeat for hours at a time certain phrases or words. The importance of these senseless repetitions in epileptic states has been emphasized by Siemerling.[11] But the appearance of mannerisms, stereotypies, negativism, as a rule, establish the diagnosis.

Recently Raecke[12] has carefully studied the transitory disturbances in consciousness in epileptics with a view to determining, if possible, whether any causal relationship exists between these and the convulsive seizures. As the result of his observations, he has come to the conclusion that the ethical and intellectual defects in epilepsy do not develop in proportion to the severity and duration of the attacks, although both phenomena are undoubtedly the result of similar disturbances in the cortical functions. The variety of the attacks may be differentiated according to their severity as follows:

(1) The severe convulsive attacks; (2) the rudimentary and atypical seizures; (3) petit mal; (4) states of confusion; (5) paranoïc conditions; (6) the dream states, and finally the periods of depression or exaltation. Gradually clinicians have come to realize that the amnesia is not a safe criterion in the absence of other symptoms upon which the diagnosis of psychic epilepsy may be made. Amnesic defects may be absent in epileptiform attacks, but when they exist may present a variety

[10] Die akuten Geistesstörungen der Gewohnheitstrinker. Jena, 1901.

[11] Ueber die transitorischen Bewusstseinsstörungen der Epileptiker in forensischer Beziehung. Berl. klin. Wchnschr., 1895, No. 12.

[12] Die transitorischen Bewusstseinsstörungen der Epileptiker. Halle a/S., 1903.

of forms. The onset is sudden, and the return of the power to re-collect and redevelop past impressions may be equally abrupt. The amnesic defect, as a rule, has the following characteristics: It may be simple, retrograde, anterograde, transitory or permanent, complete or incomplete, or may be entirely absent. Its presence may justify the suspicion of the existence of epilepsy, but its absence is not proof positive that the disease does not exist. The simple and retrograde amnesia may not render an individual irresponsible for all his acts, and in this way is essentially different from the anterograde form.[12]

Pathogenesis.—The so-called hereditary factor in cases of epilepsy is of great etiological importance. Griesinger was among the first to call attention to the neuropathic or psychopathic predisposition that exists in many cases, and clinical observation has shown that in individuals in whom this psychopathy is marked there is an apparent lowering of the resistance of the central nervous system for both physiological and pathological stimuli. As yet nothing definite is known in regard to the primary changes in function which form the basis upon which this condition develops. As the result of clinical study, we know that the causes producing this predisposition may act through one or both parents upon the child; they may be acquired during intra-uterine life, or after birth.

In the first category may be grouped all the agencies which have such a deleterious effect upon the ancestry as to give rise to anomalies of function in the nervous system of the descendants. Chief among these is alcohol. It is affirmed that in at least one-quarter of the cases of epilepsy the history of alcoholism in one or both parents may be obtained, and not only is this poison responsible for many of the cases of pure functional epilepsy, but it is also an etiological factor of great importance in cases of imbecility and idiocy with epileptiform seizures.

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[12] Maxwell, J.: L'amnésie et les troubles de la conscience dans l'épilepsie. Leipzig, 1903.

Robinovitch[18] has endeavored to demonstrate the apparent definite causal connection that exists between this psychosis and various forms of ancestral alcoholism. Nevertheless, while it is only right to be exceedingly cautious in minimizing the importance of this drug as an etiological factor, the fact must be kept in mind that the existing evidence does not fully justify the statements so frequently made to the effect that there is an immediate causal connection between the occurrence of alcoholism in a remote ancestor and of epilepsy in the individuals of a later generation. Many of the agencies that interfere with normal conception and pregnancy may result in the birth of epileptic children. In this category may be enumerated psychic shocks, trauma, as well as the various accidents incident to pregnancy and parturition.

In addition to the deleterious effects upon the offspring of chronic alcoholism in the parents, it is well known that lead, morphin, etc., may be equally important factors in the production of epileptic children. A similar tendency exists if the parents suffer from general constitutional diseases, such as tuberculosis, syphilis, as well as profound anæmia, leukæmia, diabetes, gout. In such cases the children may suffer from a general impairment of the functions of the central nervous system or from marked developmental anomalies of structure and subsequent impairment in function.

The deductions derived from careful clinical observation all tend to support the view that epilepsy is to be considered not as the immediate effect of the deleterious action of the agencies already described, but rather as an expression of a certain established predisposition, and the same factors which may have been potent in the production of the tendency of an individual to nervous or mental disease may also become important etiological factors immediately operative during his life. This is particularly true in regard to the various forms of intoxication to which reference has already been made. Alcohol, lead, mor-

[18] Robinovitch, Louise G.: The Genesis of Epilepsy. The Journal of Mental Pathology, 1902.

phin, may all play an important rôle. The same is true in regard to the effect of exhaustion. Excessive mental or physical strain may have an injurious influence upon the central nervous system. The chronic constitutional diseases of childhood, such as rachitis and scrofula, are also of importance, as well as the diseases which develop later in life, particularly at the time of puberty, such as the severe forms of anæmia, the hemorrhagic diathesis, scurvy, hemophilia, gout, arthritis deformans, diabetes mellitus. The relation of the acute infectious diseases to this psychosis has been repeatedly emphasized by clinicians—measles, diphtheria, typhoid, as well as whooping-cough, scarlet fever, and malaria.

That a connection exists between syphilis and epilepsy has long been recognized. The cases of functional epilepsy which develop in individuals who have had a syphilitic affection are to be differentiated from those in which the convulsive seizures are merely the early symptoms of marked structural lesions due to the specific toxin. Long ago Fournier called attention to the fact that the primary infection might become an etiologic factor of great importance in the pathogenesis of cases of epilepsy. Parasyphilitic epilepsy often occurs in individuals in whom the primary infection has taken place years before the appearance of the convulsive disease.[15] The attacks, as a rule, appear less often than in the so-called idiopathic forms of the disease, but the dream-like states are comparatively more frequent, while the intellectual defects are less common. The fact should be borne in mind that the specific infection cannot be justly regarded as the prime cause of epilepsy if a definite history of the action of other injurious agencies, such, for example, as trauma, alcoholism, severe attacks of the acute infectious diseases, cardiac lesions, arterio-sclerosis, diabetes mellitus, has been obtained. The causal relationship between epilepsy and syphilitic infection has been referred by some clinicians to the so-called dyscrasia, by others to the changes in metabolism caused by the action of the syphilitic poison, or, finally, to the

[15] Syphilis und Nervensystem. Max Nonne. Berlin, 1902.

lesions in the central nervous system analogous to those that occur early in the infection in the mucous membranes and skin.

Paris [16] has suggested the following purely hypothetical explanation of the malady: A hyperactivity of the central nervous system due primarily to an increase in the secretion of the thyroid and genital organs develops, and associated with this there is an accumulation of toxins in the blood due to a diminution in the excretive activity. The basis for such an assumption rests largely on those observations which tend to show that epilepsy is more common in women than in men, and also that many cases of this disorder frequently seem to be temporarily benefited by marriage and pregnancy. The indications for treatment based upon this theory are: (1) to attempt to diminish the general sensibility; (2) to try to limit the functional activity of the thyroid and genital glands; (3) to secure elimination of the secretions, and, finally, to prevent as far as possible the accumulation in the organism of all toxins which may serve to increase the meningo-encephalitic excitement.

Treatment.—The prevention of the spread of this disease is of the greatest importance. In addition to the attempt to mitigate or remove the causes referred to as of etiological value, the physician should do all in his power to prevent the marriage of an individual who has been afflicted with genuine epilepsy. There is no form of mental disease in which there is greater danger of either the recurrence of this malady or of the appearance of a new psychosis in the descendants.

During the periods of depression and excitement the patients are much better off in an institution, where they can be under constant medical supervision and receive careful nursing. Sufficient has been said to show that these individuals may be a source of great danger, not only to themselves but to the community, and therefore for their own sakes, as well as for the well-being of others, they should be placed in a hospital as soon as the first symptoms of marked alienation are recognized. Fre-

[16] Arch. de Neurologie, 1904, Nos. 98-99.

quently a great deal may be accomplished by the dietetic treatment. The patient should be taught to eat slowly, and in order that he may not overburden his stomach should be allowed to take small quantities of food repeated at intervals of three or four hours instead of three meals a day. All forms of stimulants are prohibited. Alcohol in any form is a poison, and the same is true to a less extent of tea and coffee. Tobacco should also be withdrawn. As a general rule, the amount of butcher's meat should be restricted, chicken, fish, oysters, and milk taking its place. Fresh bread, pastry, and sweets are strongly contraindicated. In the severer cases an exclusively milk diet continued for some time will prove satisfactory. Not infrequently if the dementia is not marked and the periods of excitement and depression are not excessive the patients do exceedingly well in country homes under medical supervision where they can be cared for under the colony system. Although the use of the bromides is generally indicated during the periods of excitement, much may be done to quiet the patient by restricting the diet and by giving wet packs or the continuous bath. Sedative drugs are far less efficacious in the treatment of the various forms of aberration associated with epilepsy than they are in controlling the attacks associated with convulsive seizures. The bromides may be administered in the form of the sodium, potassium, or ammonium salt, preferably alone or in combination. Care should be exercised to avoid bromism, which is generally accompanied by marked loss of appetite, disturbances in the gastro-intestinal tract, acne, diminution in the reflexes, impairment of memory, and apathy. Arsenic is frequently of use in combating these symptoms, and in addition is an excellent tonic. Bromalin (Merck), bromopin, and bromocol have been recommended by various authorities. Flechsig advises the bromide-opium treatment. He gives extract of opium, beginning with small doses, the quantity being gradually increased until the end of the sixth or seventh week, when the opium is suddenly withdrawn and is replaced by bromide. Toulouse and Richet have endeavored to bring about what they term a "hypochlorization" of the body in

order to facilitate the absorption of the bromide. The daily diet is as follows: 1 to 1½ litres of milk, 40 to 50 grammes of butter, 3 eggs without salt, fruit, 300 to 400 grammes of white bread. Instead of common salt the patient is given three grammes of sodium bromide a day. This procedure seems to have been followed with some success. Cesi [17] believed that he had isolated two specific substances in the blood of epileptics and that he had obtained beneficial results in the line of treatment by employing an artificial serum in which one of these substances was present. These results have not been generally confirmed.[18] Decided improvement has been noted in some cases after the employment of hydrotherapeutic measures. Cool applications to the head and back as well as half-baths (at 30°—26°) given for six to ten minutes are the means employed. This treatment makes it possible to greatly reduce the quantity of bromide. It is also desirable that patients should drink plenty of water so as to aid in diuresis.

The Pathology of Epilepsy.—In many of the cases of epilepsy, particularly those in which the mental symptoms are more prominent than the localized motor disturbances, it is impossible to discover any changes in the brain tissue which are in any sense pathognomonic. The cases of Jacksonian epilepsy which depend upon the existence of a local lesion are rather of neurological than of psychiatrical interest. These include the cases secondary to cerebral hemorrhage, trauma, brain abscess, tumors, embolism, thrombosis, etc. The importance of the scar tissue in the brain as a source of local irritation, which may give rise to periods of mental aberration, offers a problem that has not as yet passed the hypothetical stage, and sufficient reference to this subject has already been made in the chapter on

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[17] Del siero di sangue degli epilettici. Riv. sper. freniatr., vol. xxvii, fasc. iii-iv. Specifische Autocytotoxine u. Antiautocytotoxine im Blute der Epileptiker. Neurolog. Centralblatt, April 16, 1903.

[18] Rancoroni: La sieroterapia dell' epilepsia. Archiv di psichiat. scienze penali ed antropol. crim., vol. xxiii, fasc. 4/5, 1902. Sala u. Rossi: Zur Frage über einige angebliche toxische u. therapeutische Eigenschaften des Blut-serums von Epileptikern. Neurolog. Centralblatt, Sept. 15, 1903.

manic-depressive insanity. That more diffuse lesions in the central nervous system are apt to give rise to epileptic seizures is generally recognized. The various clinical forms of epilepsy may follow the acute meningitides, both the purulent and also the serous varieties, while not infrequently epilepsy, complicated by a slow progressive dementia, develops as a sequel to these inflammations of the membranes.

Not infrequently various sclerosed areas, which indicate the occurrence of encephalitides, are found in the brains of epileptics. These are frequently met with in the hippocampus, and considerable importance has been attached by certain authorities to this finding. Recently attention has been called to the fact that this change is in reality a hypoplasia referable to defects in the development of the brain. In some cases also there is a marked gliosis of the hippocampus with disappearance of ganglion cells from certain portions of the lobe.

Chronic meningitis plays an important rôle in cases of idiocy associated with epilepsy. Nor should it be forgotten that even when local cerebral lesions are known to exist in cases of epilepsy in the majority of cases it is impossible to establish a direct connection between their existence and the occurrence of the attacks. The same is true in regard to the hyperæmias and stases in the cerebral vessels, inasmuch as these are of secondary and not primary importance.[19] For a long time the changes in the blood-vessels in the brain of epileptics have received careful attention from investigators, and a dilatation of the fine cortical arterioles, veins, and capillaries, as well as the formation of new ones, have been reported. In most of the cases the vascular changes are plainly the result and not the cause of epilepsy.

Hydrocephalus, either congenital or acquired, is not infrequently noted, and in cases of epilepsy which have extended over a considerable period of time there is a marked increase of

[19] Jelly, F.: Pathologische Anatomie der Epilepsie und Eklampsie. Handbuch der pathol. Anatomie der Nervensystems. Abt. iv (Bog. 61-81). Berlin, 1903, S. 1276.

the subpial felting, as well as in the number of the superficial cortical vessels. Weber [29] has shown that in other cases there is a localized irregular increase of the perivascular glia fibres, both coarse and fine, that in some places fills up the whole of the outer layer of the cortex and completely obliterates the vessels. There is also an increase in the number of glia nuclei, and the presence of large spider-cells with coarse processes is noted in cases where there is a localized encephalitic inflammation. The increase in the glia is in all probability secondary rather than primary in character. Often there is a heaping up of small round cells, probably neuroglia elements, about the larger nerve-cells, and the latter when closely examined may show an excentric position of the nucleus and considerable degeneration of the granules. These changes, however, are not in any sense specific.

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[29] Weber, L. W.: Beiträge zur Pathogenese und patholog. Anatomie der Epilepsie. Jena, 1901.

CHAPTER XVII

THE HYSTERIA GROUP[1]

ALTHOUGH a perfectly satisfactory definition of this disorder cannot be given, its chief manifestations are easily recognizable and are capable of analysis and description. According to our present views, hysteria is now held to be a disease which, to a greater or lesser extent, affects the entire organism,[2] and the mental anomalies associated with it are sufficiently marked to justify its inclusion among the psychoses. Sydenham was the first to describe hysteria as a disease of the nervous system, but it remained for Charcot to affirm that hysteria was a psychic malady *par excellence* and for Janet[3] to see in this disorder "a form of mental disintegration characterized by a tendency towards the permanent and complete dissociation of the personality. The symptoms are both primary and secondary. The former are capable of being reproduced by suggestion; the latter are more subordinate in character.

The psychic abnormalities of hysterical individuals may be roughly divided into the following categories:[4] (1) The ideas or representations of the patient's own body, the so-called organic sensations, appear in consciousness with an abnormal degree of intensity. (2) The emotional reactions directly and indirectly connected with this complex of sensations may be so intensified as to interfere with both sensory and motor functions.

For a full description of the physical symptoms of hysteria

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[1] Prentiss, George J.: Hysteria and Certain Allied Conditions, 1897. Binswanger: Die Hysterie. A. Hölder. Wien, 1904. Hellpach, W.: Analytische Untersuchungen zur Psychologie der Hysterie. Centralbl. f. Nervenheilk. u. Psych., Bd. xv, 1903, p. 336.

[2] Briquet: Traité de l'hystérie, 1859, p. 517.

[3] Janet: The Mental State of Hystericals. Translated by Corson. G. P. Putnam's Sons, 1901.

[4] Weygandt: Psychiatrie. München, 1902.

the reader is referred to the various text-books of neurology as well as to the monographs on this subject. The more complex mental phenomena of this disease are largely conditioned by (1) disturbances of the attention; (2) anomalies of emotion; and finally, (3) a general interference with the normal mental functions, particularly noticeable in the disturbances of memory and in the vivid play of the imagination. As these primary symptoms may give rise to a variety of disturbances of the mental processes the latter may be advantageously studied from many different stand-points. Briefly stated, then, the mental stigmata consist in anæsthesias, amnesias, and abulias. The normal sense perception is not infrequently interfered with and patients frequently suffer from anæsthesias, paræsthesias, hyperæsthesias, and disorders of sensation, so distributed as not to correspond with the peripheral distribution of any one nerve, and which for this reason are more properly described as psychic anæsthesias, psychic paræsthesias, and psychic hyperæsthesias.

The anæsthesias or hyperæsthesias are sometimes limited to one-half of the body—hemianæsthesias, hemihyperæsthesias—or occur in areas forming plaques or geometrical figures.* As has been said above, the disturbances in sensation bear no relation to the distribution of the peripheral nerves and may be general, localized, or selective in character. For example, there may be insensibility to pain and heat or only to the uncomfortable sensations produced by forcible movements of the limbs. Another important characteristic of these disturbances is their tendency to become systematized. Thus, some patients affirm that they are able to see certain objects or certain persons and not others. The selection in these cases seems to be determined by the mental state of the individual. General anæsthesias are occasionally noted. The hyperæsthesias or hyperalgesias are associated with various organs and take the form of myalgias, cephalalgias, pleuralgias, etc. In all probability, however, they are much rarer occurrences than is com-

* Charcot: Leçons sur les maladies du système nerveux.

monly supposed. In regard to these phenomena one must be careful to distinguish between the cases in which there is an apparent and a real accentuation in the sense acuity. Moreover, there exist certain phenomena, commonly referred to as hyperæsthesias, that are of purely psychic origin and are referable to the presence of certain fixed ideas. In such cases the patient is not only extremely sensitive to all forms of external stimulation, touch, heat, cold, etc., but is also affected by a general mental hyperæsthesia frequently shown by the fact that he complains of suffering acutely before any cause has been operative; and again, these psychic hyperæsthesias or hyperalgesias are often combined with actual anæsthesias. Thus, one of Janet's patients would shriek with pain as soon as the examiner's hand approached her abdomen, but immediately her attention was distracted, it was observed that there was an actual diminution of sensation. The fixed ideas not only have a remarkable effect upon general cutaneous sensibility, but also upon the special organs, such as vision and hearing.

The contradictory characteristics of the sensory anomalies are more particularly of diagnostic importance. They often change with great rapidity and are largely influenced by suggestion. Not infrequently the sense organs seem to be in a state of hyperexcitation, so that in the visual sphere we may meet with hallucinations and illusions. The former are more apt to be elementary, although at times patients affirm that they see visions of the character to be described later. Elementary auditory hallucinations occur, but are less common. Sometimes these phenomena seem to be purely subjective and appear even in the absence of any well-defined external stimulus, while at other times they are evidently illusions.

As a rule, these disturbances are associated with marked emotional anomalies and are accompanied in many cases by attacks of pain—headache, intercostal neuralgias, etc. Their duration varies from a few minutes to several hours, seldom longer. Their subjective character is usually recognized by the patients, who appreciate the fact that they are abnormal, and their conduct, with the exceptions referred to later, is sel-

dom actuated or dominated by these fallacious sense perceptions. Micropsia and macropsia are not infrequently noted, and in many instances it is possible to produce hallucinations by mere suggestion. The taste and smell are affected in a large percentage of the cases. Hysterical patients generally show idiosyncrasies in their sensory predilections, expressing preference for unusual dishes, taking pleasure in such odors as that of asafetida or valerian—odors that are wont to be particularly objectionable to the normal individual. The attention of these patients is readily gained, but quickly lapses, and can only be sustained with great effort. These fluctuations unquestionably form the basis of many of the amnesic defects to which reference will presently be made. This condition—the so-called aprosexia—was first described by Guye in referring to the lapse of attention noticeable in patients suffering from some obstruction in the nasal passages. The symptom can often be readily demonstrated. If the patients are made to read either to themselves or out aloud, although the words may be pronounced correctly and without delay, it is quite evident that the sense of the sentence is not apprehended. Whole paragraphs may be read without the individual being able to recollect any of the words. If the patient is forced to stimulate the attention to the utmost, there is often to be noted a reflex series of phenomena, such as headache, vertigo, various indefinite pains, and more or less nervousness which may lead to emotional outbreaks. On account of the marked distractibility hysterical patients are frequently led to errors in interpretation of a great variety of phenomena and events, and this fact is fundamentally responsible for many of the apparent inconsistencies and contradictions in their character that are commented upon by the laity. The defects in memory are characterized by a considerable degree of capriciousness, and not uncommonly may be increased or diminished by suggestion.

The systematization, frequently characteristic of the sensory disturbances, is also noticeable in regard to the amnesias. Many hysterical patients forget only certain facts connected with the train of thought, while retaining a logical and uninter-

rupted recollection of others. Such forms of amnesia occur not only for events, but in regard to persons and particularly for language. This last defect may be so pronounced as to give rise to difficulties in differentiating the case from one of aphasia. The loss of memory may be restricted not only in this way, but may also include the muscular movements, being sometimes limited to those concerned with articulation or with the performance of certain definite acts; or in severer types it may be much more extensive and involve the muscles of the limbs and trunk, as in astasia abasia.

Among the more complicated forms of hysterical amnesia are disturbances in the sense of recognition, an anomaly which has recently been described by a number of observers.* Patients who are afflicted in this way not infrequently affirm that there has come about a marked change in their sensations, so that they are unable to recognize their surroundings and familiar objects. The feeling is common in hysteria, but may also occur in epilepsy as well as in other neuroses. Thus a patient will often affirm that he is more or less suddenly "overwhelmed by an indescribable sensation that makes everything seem strange and far away."

As has frequently been pointed out, the disturbances of volition are characterized by a series of changes similar to those noted in connection with sensation and memory. The abulias may be both local and general as well as characterized by more or less systematization. The intellectual forms seem to be in a measure dependent upon the patient's inability to think correctly, but when a synthesis has once been established—for example, when a new idea has given direction to a train of thought—this not infrequently persists.

What has been said in regard to the mental abulias is equally true of those with which emotional reactions are ordinarily associated. A hysterical patient will always hesitate about beginning a new series of movements, and when told to

* Pick: Neurol. Centralbl., Jan. 1, 1905. Alter, W.: Ueber eine seltenere Form geistiger Störung. Monatsschr. f. Psych. u. Neurol., 1905, Bd. xvi, H. 4, S. 296.

do a certain thing he may make the attempt, but the effort is feeble, spasmodic, and soon fails. Such individuals give one the impression of being unable to gather up sufficient force at the outset to overcome an initial resistance, and for this reason an act when once committed is frequently repeated and becomes in time partially automatic.

These abulias in hysteria exert a marked reflex effect upon the whole mental attitude of the patient. The totality of the emotional reactions in hysteria is reduced as compared with those occurring in the healthy normal individual. Only a comparatively few stimuli—the insistent ideas—serve to awaken an emotional response. The hysterical individual can hardly be regarded as a person with broad interests; he usually becomes cynical and narrow-minded in regard to everything that does not immediately pertain to himself. On the surface he may be apparently generous and disinterested, but when his character is closely studied it will seem that there has come about a great narrowing of the intellectual horizon. These anomalous emotional states are often well marked and explain both the general attitude of the hysterical patient to his immediate environment as well as his general loss of interest, as a consequence of which he is usually found to be devoid of altruism and markedly deficient in many social instincts, so that he frequently expresses a longing to be left alone and seems desirous of becoming more or less isolated. Nevertheless, on account of his impressionability, a paradoxical state develops in which noble sentiments, such as those of gratitude or sympathy, are passionately expressed, but as promptly forgotten.

The hysterical modifications in character, to which allusion has already been made, are very varied and incongruous, and the disturbances in sensation, attention, and memory in turn give rise to a dissociation of the personality. No single feature of these anomalies of character is as constant as their inconstancy (Sydenham). Hysterical individuals are incapable of any prolonged effort, for the reason that they lack the power of concentration and because the focus of their attention is constantly changing. It is true that individuals belonging to

the highly intellectual class may be easily interested and are at times vivacious and animated, but the intelligence, far from being progressive, is frequently retrograde. The knowledge accumulated by these persons is, as a rule, superficial, although it may cover a great variety of subjects. The countless lapses in attention and the accompanying amnesia often render it impossible for such individuals to add materially to their store of knowledge, inasmuch as each new stimulus from without seems to divert and disorganize the train of thought. When their attention is obtained, the observer is particularly struck not only by the ease with which it lapses, but by the fact that it can be only partially diverted to subjects that lie outside the patient's own individuality. If the patient is aroused from an apparent revery, momentary attention is given to what is being said, but not infrequently the conversation is broken by the interjection by the patient of some quite irrelevant idea that has evidently just at that instant crossed the field of attention.

In addition to the changes already noted, hysterical patients are apt to be exceedingly selfish, this trait manifesting itself in a great many different ways and being the direct result of the dissociation which occurs in personality. Such individuals seem so absorbed in their own tiny world that they fail to grasp in any sense their relationship to their immediate family and friends. This symptom is the result of the general mental impairment as well as of the diminution in the number of the emotional reactions. Hence it is not surprising that hysterical individuals show remarkable inconsistencies in character, and these in their turn are dependent upon the physical defects in function to which reference has already been made. Prominent among the mental idiosyncrasies of these patients is a tendency to lie. This failing is often referable to the same cause as that which engenders untruthfulness in children—namely, fear. In many instances hysterical individuals have a strong tendency to deceive on account of a desire to conceal their defects combined with a craving for sympathy from others. The abnormal activity of the imagination in hysterical patients is another fertile source of their lack of veracity. Not

infrequently these individuals tell about the most extraordinary adventures that they affirm have happened to them, but which, upon investigation, are shown not to be based upon a single fact. These Munchausen-like narratives not infrequently refer to extraordinary scenes through which the individual has passed or to events that have occurred in his daily life. The history of the following case affords an excellent illustration of this type of hysterical liar:

Male, aged 24, admitted to the Sheppard and Enoch Pratt Hospital.

Family History.—Maternal uncle insane. No other history of nervous or mental disease.

Personal History.—Born at full term. Paralyzed at the age of 3 on the right side, and did not recover for several months. Otherwise growth and development were normal. He walked and talked at the usual age. Began school at 6. He was more or less nervous as a child, but submitted fairly well to disappointments and gave up without giving expression to his own desires. He did not care for study, but showed a great desire to travel and read books on such subjects. His memory was good. There is no history of definite disease. In character he has been excitable, rambling, vacillating, impulsive. He has been a regular and sound sleeper until a short time ago. He affirms that he has never taken a drink in his life, and has never used tobacco. For some time he has had nervous spells, during which he has taken occasional doses of morphin, prescribed by a physician.

The *present illness* is attributed to overwork, ill-health, and disappointment. Eighteen months ago he insisted on going upon the stage against the wishes of his family, though they finally consented. He began to study in a dramatic school, but was not successful. He then traveled about with a company. Three weeks prior to his admission the patient had written to his father, asking for a sum of money as a ransom, which was to be paid to persons living in the boarding-house where he was staying. This boarding-house, of questionable character, was in a town over one hundred miles distant from the city in which the patient had lived. On being questioned the patient affirmed that he had walked to this town from the city in company with a young man; but he either could not or would not give any further explanation. His condition at this time was described as weak, and the patient seemed apathetic, although at times he complained a good deal of pain about his heart. When admitted to the hospital he had attacks of apparent unconsciousness. At times he was violent, and had to be restrained, although he had offered no objection to being brought to the hospital and seemed perfectly rational. He spent a good deal of his time in reading or walking, and enjoyed bowling and playing games.

Physical Examination.—Well developed, not very muscular. Tongue protruded in middle line, straight, not tremulous.

Eyes: Pupils well dilated, react fairly to accommodation.

Heart: No enlargement; sounds normal. Dermatographia very rapid and diffuse. (During the examination the patient said that he had had a number of nervous attacks during the past few months. He could tell when the attacks were coming on. He said that a pain started in his heart and extended down to his hip; later he could feel this from his head to the tips of his toes. The sensation he experienced was as if a knife were sticking into his heart and there was red-hot blood in his veins. When overwhelmed by these attacks he was very nervous and could not sit still.)

His attention is easily obtained and well maintained. He gives a disconnected account of his experiences, and does not seem to understand that his story must fail to impress others as being truthful. He gives utterance to a great many inconsistencies, some of which he recognizes. His own account of his conduct prior to his appearance in the boarding-house referred to is as follows: He was in the company for two-and-a-half years and was getting on very well, although others may not have thought so. He proposed to a friend that they form a company of their own. This they were unable to do through lack of funds. Following this, he was engaged to play in a stock company. While on his way to join it with a friend he was waylaid in an unfrequented street by two men, who chloroformed him. He did not entirely lose consciousness, and felt a revolver in the pocket of one of his captors, and thus realized that resistance was useless. He and his friend were confined in a room in the city until finally they made their escape. During the time that he was tied he lost from a pint to a quart of blood.

The story is altogether improbable, and, as the patient narrates it, full of inconsistencies.

While in the hospital he has had nervous attacks, preceded by pain in the region of the heart, with some motor restlessness, during which he walks up and down the room wringing his hands and crying aloud. The attacks can be quieted by a hypodermic injection of distilled water.

Another factor of importance in the hysterical stigmata is supplied by the over-valuation and persistence of certain ideas. Reference has already been made to this point, and it has long been known that this phenomenon is important not only in the production of the disturbances in sensation and motility, but also dominates all the mental processes of the hysterical person. It frequently happens that this remarkable play of the imagination is associated with an abnormal emotional state, during which the subsequent acts of the individual seem to be guided purely by an intense egotism or by impulses which are the result of a passionate outbreak. As a rule, such individuals show a remarkable deftness and great ingenuity in

concealing all the consequences of the unlawful acts which they may have committed. Examples of this are occasionally met with in the law courts, where an attempt at poisoning or murder has been completely covered up by the patient.

The *suggestibility* of hysterical patients is very great, and, as has already been said, anæsthesias, amnesias, paralyses, and abulias may be induced by this agency in the form of a single idea or a complex train of thought that occupies the entire field of consciousness. Sometimes single sensations may be interposed to form a link in the chain of thought; for example, an attack of pain in any part of the body may be associated with the idea of injury. The train of thought may be so complicated as to completely occupy the field of attention, and while this lasts may completely transform the individual. In some instances a condition occurs which has been described as *délire somnisique*.[1] In this state individuals are completely preoccupied by events which have happened at a period long antedating the attack, and both by their conduct as well as by their whole mental state reveal the fact that they live in the past. It is important to note that under the influence of suggestion, if any train of thought is once diverted by an external stimulus, this serves as a starting-point about which new ideas cluster. This frequently means that a complete series of visual and auditory as well as kinæsthetic representations are re-collected and redeveloped, this growth in mental elaboration being more or less automatic and depending upon a repetition of ideas and memory pictures which have once been stamped upon consciousness. During this process the sensations upon which the idea of individuality depends are reduced to a minimum; perception becomes altered in character, and, as a rule, the representations are but faintly stamped upon the memory, a fact which, more than any other, serves to differentiate the thoughts and acts of hysterical patients from those of normal individuals.

The *dream states* which occur during the course of hysteri-

[1] Pitres: Leçons cliniques sur l'hystérie, ii, p. 293.

cal attacks are not at all uncommon and present many qualities that are striking and, in a measure, characteristic. According to Sollier,[8] hysterical patients are always in a pathological state of dreaminess, and this drowsiness and the anæsthesias are practically one and the same, so that it suffices to completely arouse the hysterical person in order to entirely restore sensation. Such individuals, if left undisturbed, easily lapse into a state of revery, so that it may easily be said of them that "they are not content to dream constantly at night; they dream all day long."

In these conditions the patient, while under observation, seems to be wool-gathering, is confused, falls into a state of dream-like revery. Speech may be limited to monosyllables, is sometimes incoherent, and, although the patient may seem to be emotional and apparently desirous of describing his sensations, he is unable to do so. Not infrequently the speech is characterized by marked irrelevancy (Vorbeireden).[9] During these states there is a very marked narrowing of the field of consciousness and a temporary suspension of many of the functions of association. The acts that have the appearance of volition are, in a measure, influenced by the idea which at the time happens to occupy the field of consciousness. This point is well illustrated in the cases that are influenced by hypnotization, and for this reason have been described as hypnoid states (Breuer). During these dream states individuals may perform curious and inexplicable acts, in some instances committing crimes, such as theft or arson; or at other times their conduct seems to be purposeless and without any apparent appreciation of its real significance.[10] Sometimes these dream

[8] Genèse et nature de l'hystérie. Paris, Alcan, 1897.

[9] Ganser: Ueber einen eigenartigen hysterischen Dämmerzustand. Arch. f. Psych. u. Nervenkrankh., xxx, S. 633. Zur Lehre von hysterischen Dämmerzuständ. Arch. f. Psych. u. Nervenkrankh. xxxvii, Hft. 1, 1904. Nissl: Hysterische Symptome bei einfachen Seelenstörungen. Centralbl. f. Nervenheilk. u. Psych., xxv. Jahrg., Jan., 1902. Weygbal, A.: Ueber hysterische Dämmerzustände und das Symptom des Vorbeiredens. Neurolog. Centralbl., Jan. 1 and 16, 1903.

[10] Wellenberg: Handbuch der gerichtlichen Psychiatrie. Berlin, 1901.

states are interrupted by impulsive acts which, in a measure, resemble those committed by patients in the early stages of dementia præcox.

The following abstract serves to indicate many of the hysterical traits:

Female, aged 25. Single.

Family History.—Father nervous. Two brothers of the patient are also nervous. Otherwise the family history is negative for any nervous or mental disease.

Personal History.—No serious illness except scarlatina and diphtheria. Her health in childhood was good. She received a severe fright when 5 years old. The patient affirms that she can never remember the time when her mind was not morbid. The catamenia began at 14, and were preceded by attacks of great nervousness. The lack of sympathy between herself and her mother and her own hypersensitiveness gave rise (she affirms) to untruthfulness. Even as a child she expressed a desire to become a trained nurse. Apparently the periods of depression antedated puberty by a long time, and she affirms that the idea of suicide has been in her mind for a great part of her life. After her fourth menses the patient disappeared from home and was absent long enough to occasion some anxiety. She returned later in the day, and from the account given had apparently been wandering about aimlessly. As a rule, she is very nervous and fussy during the menstrual period. Her first marked nervous breakdown occurred when she was about 16 years of age. She began to study nursing at 18, but was unable to stand the strain. She suffered from some flow recurring every week or two, and was operated upon for retroflexion. She says that she went a good deal into society, and being very nervous she felt the need of stimulants, so that she took small amounts of whiskey. She did not form the whiskey habit, but began the use of coffee instead. Later, she drank a great deal of tea. In 1900 she complained of constant fatigue. Being threatened with the rest-cure she relinquished the idea of spending most of the time in bed. She had a number of hysterical attacks. She often assumed a theatrical manner and affected not to know her friends. She was found one day by her mother inhaling chloroform. Once when visiting a friend she left the house, saying she was bored and that she would return when she got ready. Between five o'clock one afternoon and the next morning at eight she wandered about in the woods. The recollection of this event seems to be somewhat defective. Soon after this she declared that she intended to get some poison and go to a deserted house, after having gotten rid of all her jewelry and clothing which could identify her, melting the jewelry and burning the clothing, and then swallowing the poison. Of that night she only remembers "the woods and the wind." She has been very emotional and talkative at times, and at others depressed and much given to talking about suicide. She has had several attacks in which she flings herself about

the bed, but soon becomes quiet and lucid. She is very self-centred, feels compelled to constant activity, but at the same time overcome by a sense of fatigue. She has made several dramatic attempts at suicide, once trying to tie a shoe-string tightly about her neck. She occasionally discusses her mental state, and at times affects that she expects to become a raving maniac.

The *physical examination* was practically negative. Vision good. Visual field unimpaired. Pupils moderately dilated and very active to both consensual and direct light reflexes.

Urine, slightly acid, specific gravity 1009. Very faint trace of albumin. Dense cloud of phosphates thrown down on heating. No sugar. The bodily weight is said to vary from 95 to 105 pounds.

The patient was discharged somewhat improved after being two months in the hospital. She went to a private sanitarium, from which she escaped, and went to live in a large city, as she thought it would be necessary for her to become a working girl. She was there for nearly two years before her whereabouts became known to her family, and was finally found only by the merest accident.

The duration of the dream periods may last from several minutes to weeks or even months. They are said to bear some relation to the hysterical convulsions preceding or following them, or to form the so-called psychic equivalents. During this period of limitation in the field of consciousness, ideas and impulses that have been prominent during the lucid intervals dominate the individual. The diagnosis of the hysterical dream state, as a rule, depends upon the sudden appearance of the disturbance, which is generally caused by some immediate and discoverable motive; or it may be the final stage of an emotional outbreak.

Hysterical patients are frequently given to *somnambulism*. This phenomenon presents itself under a great variety of forms which within the present limits cannot be described in detail, but are dealt with fully in the works of Janet, Gilles de la Tourette, and Hack Tuke. Many writers maintain that the somnambulism of children is one of the earliest symptoms of hysteria, as is shown by the development of other symptoms. The somnambulist, as a rule, has a set expression, the pupils are more or less immobile; obstacles placed in the way are generally avoided, and the patients usually do not injure themselves.

In addition to the clinical pictures already described, quite a number of *delirious states* may occur which have been divided by Colin into the following categories:[11] (1) Delirious manifestations in ordinary hysteria; (2) an hysterical mental state associated with definite alienation. Pitres[12] describes three types of delirium: (1) hysterical mania; (2) an hallucinatory delirium; (3) délire oneirique. At present such a sharp differentiation does not seem to be practical. The delirium is characterized by a great number of different symptoms. There may be marked depression, the patient being hypochondriacal, self-centred, and giving expression to countless complaints; or, on the other hand, there may be excitement with a feeling of exaltation, during which the patient may perform numerous silly acts. In some instances during the delirium the patient raves about religious subjects or becomes profane and obscene. The visual and auditory hallucinations predominate and in many cases are so vivid as to suggest stages of acute alcoholism. The irritability of these patients, as may be inferred, is very great, but is not characterized by the offensive aggressiveness seen in true manic states. Their emotional instability is one of the most characteristic features, the phases in the delirium changing sometimes with almost lightning-like rapidity. During these states the patient may show a great tendency to an exaggerated play of phantasy, depicting situations which are unreal, so that it is frequently difficult to find any basis for their bizarre ideas. In some cases the delirium is colored by marked sexual irritation, which in others, however, is absent. Occasionally patients are apparently overwhelmed by periods of profound anxiety, which seems to depend upon the existence of definite phobias, the fear of losing the mind, of committing crimes, of death, etc., which may be more or less vague in their genesis. In these states of anxiety the patients not infrequently wander about, affirming that all

[11] Colin: État mentale des hystériques. Ballet's Traité de pathologie mentale. Paris, 1903.

[12] Pitres: Leçons sur l'hystérie et l'hypnotisme. Paris, 1891.

hope is gone from them, that they are to be destroyed, that they are past all help.

According to Krafft-Ebing, these delirious states may be divided into those of short and those of long duration. In the former condition one not infrequently meets with states of marked ecstatic exaltation alternating with periods of anxiousness, while the more protracted states are characterized by a greater variety of hallucinations and a moderate dulling of consciousness with considerable systematization in the various representations that appear before consciousness. These are the cases described in the literature under the head of hysterical hallucinatory insanity. The attacks may begin suddenly and last for weeks or months and be characterized by periods of remission or intervals when there is a relative degree of lucidity. These delirious states not infrequently develop after great mental or physical fatigue and are particularly frequent in women after severe menorrhagias as well as during the puerperium and climacterium. The systematization is sometimes marked; ideas of persecution, of having committed sins, erotic desires and impulses, as well as religious excesses, are prominent. Great care must be exercised in differentiating these cases from those of manic-depressive insanity. Some writers mention a more protracted form of the malady in which the various disturbances of sensation and consciousness are more persistent and the ideas more definitely systematized. These are not infrequently described as hysterical paranoioid states, and may be ushered in by periods of depression or excitement characterized by marked hysterical symptoms. Although some of them are unquestionably instances of pure hysteria, the fact should never be lost sight of that others mark the initial stage of various psychoses.

As a rule, hysterical mania is characterized by incessant movement without marked incoördinated agitation. The patients throw themselves about, roll on the floor, but are not apt to injure themselves, a fact that is partly accounted for by the presence of considerable lucidity, in marked contrast to the mental state in mania. The conduct is capricious and

menacing; the actions are frequently eminently contradictory.[12]

Age.—Hysterical symptoms may occur in children, and descriptions of outbreaks of this psychosis in young persons are not infrequently found in the literature—the chorea major, the dance rage, etc. Since Briquet's work in 1859 many other excellent clinical pictures of the disease have been recorded, and it is now admitted that when the disorder occurs in young people in at least one-fifth of the patients it appears before the twelfth year. As von Strümpell has said, "If hysteria did not exist in children, there would be no 'wonder cures' and no 'wonder doctors.'" When the disease makes its appearance before puberty it comes on, as a rule, between the seventh and fourteenth years.[13]

Sex.—The disorder is more common among women than among men. In the latter, however, the symptoms are far more apt to assume a serious aspect and, as a rule, are characterized by greater tenacity and a more intense depression. After the prime of life has passed the clinical picture in both sexes corresponds more to the male type—*hystérie douloureuse à manifestation splanchnique*.[14]

Etiology.—The etiology of the disease is very imperfectly understood, although, generally speaking, the majority of the cases occur in individuals with a psychopathic constitution. Not uncommonly the symptoms first make their appearance after mental shock or following trauma. Cases belonging to the latter group are frequently of considerable forensic importance. Hysterical symptoms are often noted in the early stages of various forms of alienation, such as mania, dementia præcox, dementia paralytica, and are not uncommon in all forms of toxæmia, particularly those due to alcohol, lead, morphin, cocain, and other poisons. Great care should be observed, however, in affirming that the symp-

[12] Sollier: Guide pratique des maladies mentales. Paris, 1893.

[13] Bruns, L.: Die Hysterie im Kindesalter. Halle, 1897.

[14] De Fleury. Contributions à l'étude de l'hystérie virile. Bordeaux, 1890.

toms are always the result and not the cause of the addiction to alcohol. This fact is of great importance in connection with the genesis of the various drug habits which not infrequently develop in individuals upon an hysterical basis.

Differential Diagnosis.—The hysterical states not infrequently develop during the prodromal periods of various psychoses. When this is the case the positive diagnosis can be established only after the other more specific symptoms have become more prominent. These cases must be carefully distinguished from those in which the hysterical symptoms are more or less stable and which are not complicated by those of other forms of alienation. The differentiation of hysteria from *neurasthenia* is frequently difficult. As a rule, the occurrence of the hysterical anæsthesias or the various forms of paralyses gives important indications. The same painful points on pressure may be found in both instances, but in hysterical states they are apt to preponderate on one side of the body and bear some definite relationship to the changes in the cutaneous sensation. The essential difference in the mental states in the two diseases has been discussed at length not only in the present chapter, but also in the one dealing with neurasthenic states.

In the early stages of *dementia præcox* we not infrequently meet with a series of hysterical symptoms, and it is only when certain distinctive manifestations—such as catatonic periods of excitement and depression, the stereotypies, mannerisms, or negativism—make their appearance that the diagnosis can be arrived at with certainty. The importance of the so-called irrelevancy in dementia præcox (Vorbeireden, Danebenantworten[16]) has been alluded to elsewhere. When this symptom is pronounced the patients are unable to answer correctly questions of the simplest character, although they generally give indications that the sense is rightly apprehended. Nissl's view that the occurrence of irrelevancy always indicates the existence of dementia præcox needs further substantiation,

[16] Ganser: Loc. cit. Moeli: Ueber irre Verbrecher. Berlin, 1888.

inasmuch as a number of competent observers have recorded its presence in the severer forms of hysteria and particularly in the hysterical disturbances of consciousness following trauma. Frequently the hysterical dream states or periods of hallucinatory mania give rise to great difficulties in differentiation. Here the past history of the patient is of the greatest importance, particularly the occurrence of paroxysmal attacks of crying, the characteristic emotional disturbances, as well as the appearance of anesthesias, various forms of paralyses, and, finally, the sudden clearing up of the symptoms after they have existed for a considerable period of time. A comparatively large number of cases of *manic-depressive insanity* have been mistaken for various hysterical states. Here a previous knowledge of the patient's history is of the greatest importance. The diagnosis is more difficult in the milder forms where the motor restlessness, the flight of ideas, and general exhilaration characteristic of the manic state are not well developed. Such individuals not infrequently present a variety of manifestations, such as painful points on pressure, psychic anesthesias, and disturbances in the mental faculties, which to the casual observer seem to correspond with those of the maniacal stage. The diagnosis depends somewhat on the manner in which the symptoms progress. The absence of definite hysterical manifestations, such as paralyses or hysterical convulsions, are of considerable significance. The flight of ideas in the mild cases, influenced as it is by both external and internal stimulation, is decidedly different from the psychical symptoms of the hysterical individual, in which the vivid play of the imagination is far more striking than the immediate response of the patient to the various kinds of stimuli. The depression in the manic-depressive psychoses is essentially different from the hypochondriacal egocentric character of the depressed hysterical individual. The marked emotional outbreaks of the latter usually stand in direct contrast to the state of the patient in whom the objective symptoms of depression are more striking and are unaccompanied by any evidence of a more general anomalous emotional state. The occurrence of marked psychomotor

retardation is more or less specific of the depressed stage of the recurrent psychosis.

The diagnosis between the hysterical states and *epilepsy* is often beset with many difficulties. In the present chapter reference can only be made to the signs that are of diagnostic importance in attempting to differentiate between the psychic equivalents in the two disorders. The history of the onset of the attack is of considerable importance. In hysteria the prodromal symptoms are apt to be much more intense and well defined, and the so-called abdominal auræ are more prominent than in epilepsy. The loss of consciousness in epilepsy is much more apt to be sudden and complete, and during this period the patient is frequently insensitive towards external stimulation. The hysterical symptoms during the attack may be intensified by additional stimuli from without, and such patients are open to various forms of suggestion. The memory defect in hysteria is much more apt to be only partial, and the events which have occurred during the attack may frequently be recalled to the hysterical patient, particularly under the influence of suggestion.

A few cases are reported in the literature in which in the early stages of the disease symptoms of *paresis* were masked by various hysterical manifestations. Thus, one writer noted the occurrence of astasia, anæsthesia of the left leg, loss of smell and taste. These symptoms were greatly improved by the use of the faradic current, but later others specific for paresis made their appearance. Sometimes there is difficulty in distinguishing the hysterical attacks from those of an apoplectiform character occurring in the earlier stages of general paresis. The appearance of symptoms which are dependent upon the existence of organic lesions, such as impairment in the light reflex, speech disturbances, etc., at once establishes the diagnosis.

Treatment.—The suggestions that have already been made with reference to the education of neuropathic children apply with equal force to those in whom symptoms of hysteria make their appearance early in life. Although it is necessary

that all forms of coddling should be scrupulously avoided, there is no indication for going to the other extreme and attempting under the present conditions of life to train children according to Spartan methods. The giving of very cold baths to nervous children, dressing them with insufficient clothing, making them go about with bare legs and feet, or not allowing them to wear hats in cold weather are injurious fads. Such children need a regular life free from the excitement that follows either mental or physical over-exertion. It should never be forgotten that too severe physical exercise occasionally produces results as unfortunate as those following mental excesses. No definite rules can be laid down, but the most important principle to inculcate upon parents and teachers is that the education of nervous children should be entrusted only to those who themselves possess a sound mind in a sound body. Great care should be exercised in the training of the mental faculties of children who show an excessive development of the imagination, for although this faculty plays an important rôle in education no less than in the maintenance of mental and physical vigor, an abnormal tendency to read only fairy tales, ghost stories, etc., should be as far as possible discouraged.

The treatment of hysterical symptoms in the adult is an undertaking which frequently taxes the ingenuity and patience of the physician. In the first place, the latter should recognize the importance of the fact, to which Dercum and others have called attention, that in a large number of cases there is marked evidence of a general disturbance of health. The necessity of isolating patients who are suffering from attacks of hysteria and placing them in some institution where they will be under the immediate care of a competent physician and well-trained nurses can not be too strenuously urged. In some few instances among patients in the wealthier classes the isolation and rest-cure may be carried out at home, although not as successfully as in a first-class hospital. In the examination of the patient it is of great importance for the physician not to dilate too much at length upon the individual symptoms, as such individuals are so open to suggestion that not infrequently the ex-

amination, unless carefully conducted, may lead to an intensification of the pain in certain sensitive areas or an increase in the extent of an existing paralysis.

Patients suffering from the severer forms of hysteria, as soon as the examination has been completed, should be at once put to bed and completely isolated, being visited only by the physician in charge and the nurses. On no account is it advisable to permit members of the family to see the patient. The rest in bed should be at first continuous, broken only by the time that the patient spends in the bath-tub or in changing from one bed to another. Various hydrotherapeutic measures are of great use in the treatment of hysteria, sometimes the pack being used either warm or cold, and in other instances the prolonged bath (see Chapter V). The physician's commonsense and judgment must tell him which line of treatment is the most efficacious, as individuals vary exceedingly. The depression may be greatly benefited by the cool bath or pack, whereas insomnia may be combated by the use of warm water. Electricity may be used not only to stimulate the muscles in cases of paralysis, but also to relieve pain. Frequently the faradic current or static electricity is of some benefit. Combined with the rest in bed the patient is given massage, at first once, and then later twice or even three times a day. Care must be taken not to increase the extent of any painful points, but as the patient becomes less sensitive these areas also may be rubbed. As improvement continues, instead of massage various forms of exercise, especially passive movements, may be added. The exact period of time during which the patient should remain in bed can not be dogmatically prescribed, but, as a rule, in the absence of other contraindications, it is well to persist in this procedure until the emotional instability becomes less marked and the general tone of the system is improved. Various means may be used to abort the hysterical paroxysms—sometimes a dash of cold water in the face, the administration of valerianates, asafœtida, or hypodermic injections of distilled water may be resorted to. On no account should either the nurse or the physician seem to attribute too

much importance to the seizures, and gradually the patient may be taught to control them. In the cases of individuals who are unable to go to a hospital and where the paroxysms are only of a mild character, a modified rest-cure may be instituted at home, provided there is some sufficiently intelligent member of the family who is able to aid the physician in carrying out the directions.

CHAPTER XVIII

NEURASTHENIC AND PSYCHASTHENIC STATES[1]

Since Beard first described neurasthenia the groups of symptoms included under this head have provided a field for numerous investigations by alienists and neurologists. The disease is described by many clinicians as a psychopathic condition characterized by (1) abnormal mental and physical fatigue, (2) impairment of the associative memory, and (3) sensory disturbances of psychic origin. The individual symptoms are liable to considerable variation, and those to be described seldom present an equal prominence in any one case. Dutil[2] and others maintain that it is possible to distinguish between the more or less stable mental states in which the neurasthenic symptoms of fatigue, instability, abulia, and depression are more or less constant and a variable, episodic state, *folie neurasthénique*, in which impulsivity, obsessions, and phobias recurring with some degree of periodicity dominate the clinical picture. Certain writers, more particularly Janet and Raymond, would regard both series of symptoms as representing one and the same disease, and include under the head of psychasthenia a large group of cases characterized by the ordinary neurasthenic symptoms, as well as the various forms of obsessions, impulses, phobias, tics, mild deliriums, states of apprehensiveness, and the subsequent defects in character which develop as a result of these phenomena. According to this classification, therefore, psychasthenia would, as a result of

[1] Von Krafft-Ebing: Nervosität u. neurasthenische Zustände. Wien, 1895. Binswanger: Pathologie u. Therapie der Neurasthenie. Jena, 1896. Garnier: Die neurasthenische Gehirnerkrankung. 1899. I. Janet, II. Janet et Raymond: Les Obsessions et la Psychasthénie. Paris, 1903. Loewenfeld: Die psychischen Zwangserscheinungen. Wiesbaden, 1904. Wollenberg: Die Hypochondrie. Wien, 1904. Dubois: Les psychonévroses et leur traitement moral. Paris, 1904.

[2] Dutil, A.: In Ballet's Traité de Pathologie Mentale. Paris, 1903.

these phenomena, comprise a very large number of heterogeneous cases, including such complexes as the "degenerative psychoses," characterized by the prominence of obsessional ideas and fears (Zwangsvorstellungpsychosis), the impulsive insanity, the fright psychoses, as well as the milder forms of the paranoic states—the paranoia rudimentaria of Morselli. Moebius and Dejerine hold that the neurasthenic state may properly be regarded as merely an initial stage out of which various other disturbances develop, while Kowalewsky, as long ago as 1887, maintained that chronic exhaustion or neurasthenia is a disease of the nervous system that in its milder forms affects chiefly the visceral centres, but when the malady becomes more severe gives rise to the clinical picture now referred to as psychasthenia. Janet thinks that psychasthenia has many features in common with epilepsy, and the former is referred to as if it were merely a mild but chronic representation of the latter. Clinically, psychasthenia occupies a median position between epilepsy on the one side and hysteria on the other. According to Janet, the representations in consciousness in the psychasthenic are endogenous and relate to persons or objects in the patient's environment, while in hysteria the notions that occupy the attention are exogenous in origin and the result of suggestion or emotional disturbances.

As this classification in a measure facilitates description, it has been adopted here, although with the evidence at hand it must be regarded only as a strictly provisional expedient. In the first category falls the group of cases commonly described as chronic nervous exhaustions, and in the second those in which the symptoms have a tendency to change and recur with some degree of periodicity. For the sake of convenience we shall here designate the former condition as neurasthenia and the latter as psychasthenia.

A sharp differentiation between chronic nervous exhaustion—the secondary or acquired form—from the so-called congenital type of the disease, although possible in many instances, is in others met by serious difficulties. It must be borne in mind that the two groups of cases frequently blend and that

the distinction is made more as an aid to description than because of the existence of any fundamental reason which would justify this division. Lévillain directed attention to the neurasthenic states occurring in hereditarily predisposed individuals and which make their appearance early in life, becoming accentuated at or about puberty and characterized by a variety of mental stigmata principally in the emotional and intellectual spheres, the patients belonging to the large group of individuals referred to by Magnan as "déséquilibrés."

In passing, it is well to note that a clinical distinction may reasonably be drawn between the cases of cerebral neurasthenia, or cerebrasthenia, which have a progressive tendency and in reality represent the prodromal period of certain organic diseases,—*e.g.*, dementia paralytica, senile dementia, dementia præcox,—and the uncomplicated and more or less stable neurasthenic states.[3]

Clinical Symptoms.—These will be described under two separate groups: (1) Those that are more or less stable; (2) those that have a tendency to become variable and episodic.

A. *Neurasthenic States.*—As has already been stated, fatigue, both mental and physical, is a cardinal symptom in neurasthenia. This is shown in many ways. Neurasthenics are wont to complain that every effort gives rise to a sense of fatigue, the expression of which is largely subjective, inasmuch as such individuals may under sufficient stimulus be made to exercise considerable effort, although as soon as the inciting factor is withdrawn they return immediately to their former condition. This sense of weariness not only limits the execution of volitional acts, but also impairs the intellectual processes, any attempt to continue a line of connected thought being accompanied by an abnormal sense of effort. Moreover, the patients frequently affirm that the more they struggle to throw off this mental inertia the more rapidly does the feeling of fatigue become intensified.

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[3] Schaffer: Anatomisch-klinische Vorträge aus dem Gebiete der Nervenpathologie. Jena. 1901.

An excellent method of demonstrating this fatigue in neurasthenics has been proposed by Weygandt. The patients are asked to add up columns of figures and give their results within a certain time limit. In normal individuals during the second or fourth quarter of an hour during which the experiment is carried on there is a definite increase in the facility with which the additions are made, whereas in the neurasthenic the inability to focus the attention, shown by the increase in the number of errors in the additions, rapidly makes its appearance. By this method we may construct two curves representing graphically the contrast between the normal and the abnormal individual.

For sudden and spasmodic effort there is no diminution in the dynamic power of the muscles, but this quickly falls if the strain is prolonged. The ease with which these patients are tired out is revealed in the limitation of the volitional processes, and the more complicated the chain of muscular movements undertaken the more evident does this become. In very exaggerated cases the patients complain that they are unable even to raise a limb, and remain for days and weeks in bed unless compelled to exert themselves. The mere thought of being placed in a position where the expenditure of effort is unavoidable frequently causes great mental distress. In addition to the subjective sense of fatigue accompanying physical and mental effort, we meet with a variety of sensory disturbances that may also condition the inertia, for it is not improbable, as Ziehen has suggested, that the evident disinclination to move is referable in part to hyperalgesias or hyperæsthesias. Neurasthenic patients, as a rule, seem abnormally sensitive to all forms of stimuli, each new stimulus causing an apparent radiation. For example, a bright light impinging on the retina, in addition to the immediate discomfort, sometimes gives rise to photophobia or to a whole chain of nervous symptoms. As a rule, the patients show a hyperæsthesia of one or more senses, resembling those noted in hysteria—hyperæsthesia retinæ, hyperacusis, and hyperosmia. Closely associated with these psychic hyperæsthesias is the fear of pain which is frequently

so characteristic and may give rise to states of mental anguish similar to those described by Möbius under the head of akinesia algera. Such patients frequently express themselves as being unable to tolerate the mildest irritant without becoming excessively nervous and emotional. On actual pressure various parts of the body frequently seem to be the seat of pain.

The psychic hyperæsthesias in neurasthenics are referred to by Bloch[4] as topoalgias, and are characterized, according to him, by the persistence of a painful sensory memory, a phenomenon that bears to the sensory functions a relation analogous to that of the fixed idea to the intellectual processes. Not infrequently these pains are referred to the head and neck, to various regions in the chest—particularly the præcordial or epigastric—as well as to the extremities. The pain seems to appear spontaneously, and when occurring in the head is described not as a definite headache, but rather as a more or less indescribable feeling of an unpleasant nature. Various unpleasant cutaneous sensations often appear which may be associated with emotional anomalies, such as the so-called acarophobia and other forms that will be described later on. The pains may be either diffuse or localized, and are more apt to be symmetrical in their distribution than is the case in hysteria.

Sensory disturbances in connection with the sexual organs are not uncommon. These give rise to para- or hyperæsthesias that play an important part as causes of masturbation, excessive intercourse, and the production of the whole chain of subsequent nervous and mental symptoms belonging to the so-called sexual neurasthenias. Sexual pollutions frequently occur in neurasthenics and may aggravate the already existing mental symptoms, but these are never to be considered of primary etiologic importance, being the result and not the cause of the disease. Such painful sensations in women are apt to be of greater importance than in men, as they may lead the patient to insist upon the removal of the ovaries, uterus, or clitoris.

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[4] Gaz. hebd. de méd. et de chir., Mai, 1891.

In addition to the hyperæsthesias, we frequently meet with a great variety of paræsthesias. Many patients complain of curious sensations in the extremities, of seeing flashes of light, of hearing indefinite sounds. Various forms of pruritus may develop and cause excessive annoyance. As a rule, the disturbances in the cortical centres give rise to only elementary hallucinations except in the case of the visual centre. Neurasthenics sometimes complain of seeing visions and faces when the eyes are closed, but these disappear when the eyes are opened and the subjective character of the phenomena is at once recognized by the patient. Numerous observers maintain that the hallucinations in neurasthenia, as contrasted with those in hysterical crises, never develop completely, since the mental representations remain imperfect and therefore do not dominate the subsequent acts of the patients. Further reference will be made to this subject later on when the episodic symptoms are described.

The mental characteristics of the neurasthenic are very varied. As has already been pointed out, distractibility is usually somewhat marked, so that the focus of attention is constantly changing, and any attempt on the part of an individual to fix it for a given length of time is accompanied by an abnormal sense of effort. These fluctuations are largely accountable for the amnesias. The patients complain that they cannot recollect even the simplest occurrences or events of their daily life—a fact that often distresses them exceedingly and gives rise to marked emotional disturbances, as well as increasing their sense of insufficiency. Frequently, when an extra effort is made to remember certain ideas or events, there is not only the immediate discomfort caused by the increased expenditure of energy, but the failure intensifies the emotional outbreak, so that the patients are apt to become very despondent and possessed by various hypochondriacal ideas. The irritability of the neurasthenic has already been referred to. External stimuli of all forms seem at times to be an acute annoyance. Occasionally, without apparent provocation, such individuals become angry or morose, and the exaggerated sense of con-

trition and penitence that follows is almost sure to be superseded by mental depression. Although neurasthenics may at times find an excessive enjoyment in objects or events of a pleasurable nature, they are prone to become easily depressed, a feeling which is intensified as soon as any effort meets with opposition.

Under the head of chronic nervous exhaustion may be included the group of cases described by some authors as instances of constitutional depression (constitutionelle Verstimmung). This condition is more apt to occur in individuals who show a remarkable mental development along certain lines but a deficiency in others. Such persons not infrequently are enthusiastic and earnest in beginning any new work, but are easily fatigued and discouraged. As a rule, they suffer from a variety of symptoms, and are particularly subject to hypochondriacal attacks. They are frequently more or less cynical, seldom finding anything in life from which to derive much encouragement, and continually looking upon the dark side of every question. In the higher classes of society these individuals are generally recognized as cynics and pessimists, are much given to reflection, and are, as a rule, excessively introspective.[3] As Maudsley has pointed out, this group of cases not infrequently includes individuals of great intellectual attainments but who, on account of their mental state, are none the less deficient in the power of leadership or organization. The psychic tonus of these individuals is altered, and this deterioration is reflected in their whole emotional life.[4] Many of these cases were formerly described under the head of melancholia, but are to be differentiated by the absence of insane ideas, self-accusation, as well as by the sudden changes in the affective display. In many of these individuals the appearance in consciousness of an unpleasant thought gives rise to a feeling of depression which may persist for several hours.

[3] Kowalewski, Arnold: Studien zur Psychologie des Pessimismus. Wiesbaden, 1904.

[4] Pick, A.: Zur Psychopathologie der Neurasthenie. Arch. f. Psych. u. Nervenkrankheiten, Bd. xxxv, 1902.

In the neurasthenic, as distinguished from the patient suffering from true melancholia, we find that the conditions of irritability associated with apprehensiveness are largely influenced by external impressions and ideas.

The emotional state may vary from one in which there is merely a vague sense of discomfort to one in which there is an exaggerated sense of mental depression or anguish. As a result of these tendencies, all of which centralize, the patient's interests become more and more egotistical. In some instances there is marked hypochondriasis and an elimination from consciousness of all ideas not relating to the individual needs and interests. Such patients can only talk and think about themselves or about matters in which they have an immediate interest, and eventually become incapable of any degree of altruism.

B. *Psychasthenic States.*—Prominent among the *episodic syndromes* are the various forms of obsessional ideas and impulses. As was pointed out in the introductory section, these ideas are frequently abstract in nature and exceedingly complicated in their pathogenesis. They include many different forms, of which only the more common types will be referred to here. Chief among these are the hypochondriacal obsessions, all of which tend to make the individuals self-centred and abnormally sensitive in regard to their physical ailments. Sometimes their attention seems to be riveted upon certain organs. A slight palpitation suggests the idea that they have organic heart disease, and in spite of repeated assurances to the contrary from competent physicians they adhere most tenaciously to their autodiagnosis. In other instances the obsessions are referred to the genital organs. A slight herpes or eczema is sufficient ground for believing that they are infected with syphilis. Ideas regarding impending death or the onset of various chronic maladies—such as phthisis or blindness—are repeatedly forced upon their attention. A slight cough is regarded as a sure sign of pulmonary tuberculosis; pains in the legs become the initial symptoms of locomotor ataxia; a mild degree of nausea and vomiting carries with it a premoni-

tion of gastric carcinoma, etc. Frequently these fixed ideas are related not only to the personality of the individual, but to his environment, as well as to his social relationships. Frequently neurasthenics suffer from an excessive form of shyness shown in attacks of recurrent and excessive embarrassment. Such individuals are continually plagued by the idea that whatever they do or say is regarded as improper. They affirm continually that when among strangers they are ill at ease, unable to carry on a conversation, that their wits leave them, so that all forms of social duties pall upon them.

The imperative ideas or obsessions (Zwangsvorstellungen) are associated with the so-called imperative processes, of which there is a large variety. The mental states in which these are the dominating symptom have been described by Donath, of Budapest,[1] as anarchasma. The intrusion of these irrepressible ideas into consciousness often gives rise to a great variety of mental, motor, and emotional anomalies. Among the first are the various questions which the patient frequently feels impelled to ask (*folie du pourquoi*). These in a great many cases refer to the patient's own condition, but not infrequently relate to objects quite outside of the personality. The absence of motive renders it not at all improbable that these interrogations are similar to the "whys and wherefores" of children. Not uncommonly, especially in the intellectual class of patients, this interrogatory mood drives them to the discussion of abstruse themes. They feel themselves compelled to spend much time in debating why God made the world, why they were put on the earth, the origin of right and wrong, and various other metaphysical inquiries. It is not at all improbable, as Royce has pointed out, that John Bunyan suffered from this form of mental agitation; and Rousseau in his "Confessions" admits that he was often greatly troubled by speculations as to the nature of Hell. These types are closely akin to those described by Legrand du Saulle and other French writers as "mental rumination." In such cases a long train

[1] Arch. f. Psych., 1896.

of connected ideas occupies the field of attention, so that the individual can not break away from them and is frequently obliged to continue a particular line of thought to the bitter end. Not infrequently phenomena of this character are most insistent at night and form one of the important causes of insomnia, from which neurasthenics so frequently suffer. The same is true of the so-called forced reveries into which neurasthenics are frequently thrown and from which they have the greatest difficulty in freeing themselves.

Frequently psychasthenics give objective expression to their impellent ideas by eccentricities of manner and character. Such individuals not infrequently waste a great deal of time in "putting things in order." Rest is impossible if a book or any object about the room is out of its proper place. The mania for the preservation of order is particularly noticeable in young neurasthenic mothers, who cannot bear to see their children's clothing disarranged or their hands or faces dirty even while at play. The first idea that strikes their attention is not the comfort and health of the child, but rather that they must always be scrupulously clean and well dressed. Frequently neurasthenics feel obliged to count or to work out problems—arithmomania—or express their preference for certain numbers which they feel obliged to repeat, sometimes to pronounce aloud. Similar conditions are noticeable in the states of fatigue following exhaustion, after fevers, trauma, etc., when the sufferers will tell us that they are impelled to count the figures on the wall, the books in the book-case, objects about the room, and to continue this operation until exhausted. In the condition described by Charcot and Magnan as onomatomania[1] the patient feels obliged to recall a certain name or names which have once been noticed, not infrequently spending considerable time and energy in going to some out-of-the-way street to find a certain board once casually noticed in passing. Sometimes patients affirm that without cause they are compelled to swear and blaspheme. This sometimes occurs

[1] Arch. de Neurologie, September, 1885.

in young girls or in individuals in whom the phenomenon is equally extraordinary.

In many of the psychasthenic states we meet with a variety of tics. These anomalies of movement, as Charcot pointed out,[9] are the caricature of natural acts. These various movements may be provisionally classified, not according to the groups of muscles affected, but rather by the act of which the tic is the caricature; for example, tics of the mouth, of the eyelids, respiratory tics, tics of attitude, etc.[10]

The emotional disturbances associated with anomalies of ideation and motion are also varied. Various classifications of the fears to which the psychasthenic individuals are subject have been attempted. Freud makes three categories: (1) the traumatic phobias (more common in hysteria); (2) an exaggeration of ideas entertained regarding events in ordinary life, such as fear of night, solitude, or sickness; (3) fears of place—agoraphobia, etc. Janet, on the other hand, prefers a four-fold division: (1) fears relating to the body and determined by anomalies of sense perception; (2) those relating to objects outside of the body; (3) those of situation which are not determined merely by the perception of single objects, but rather by a combination of circumstances; (4) the fears pertaining to various ideas. Many of the fears in the somato-psychic field of consciousness have already been shown to be dependent upon the psychic hyperæsthesias. This is in a measure true in regard to the so-called fears of function, fears of movement,—akinesia algera,—and the acathisia described by Haskovec.[11]

Instances have been reported in which the person has had a fear of speaking. Psychasthenic individuals not infrequently are greatly perturbed by the various phobias associated with the processes of digestion. They believe that everything that they eat disagrees with them, that their food does not nourish

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[9] Leçons du Mardi, 1888-'89, p. 464.

[10] Les tics et leur traitement. Meige et Feindel. Paris, 1902.

[11] Haskovec: L'akathisie. Revue neurologique, 30 Nov., 1901.

them. Sometimes the phobias are referred to various internal organs or are not infrequently excited by various sensations, odors, sounds, etc. Photophobia is not an uncommon symptom. In this as well as the other phobias connected with the senses the peripheral tract is intact, and in individuals who for considerable periods of time have been afraid to venture into the light, examination has shown the eyes to be in every way normal. Somewhat more complicated are the fears of touching certain objects,—délire du contact,—a series of phenomena to which Esquirol first directed attention. These include the cases of mysophobia and rupophobia.

The persistence of these ideas and the remarkable reflex power which they may exert over the conduct of the patient are well shown in the following history:

Female, aged 33 years. Married. Came to Out-patient Department, Johns Hopkins Hospital, complaining of nervousness.

Family History.—Mother extremely neurotic, paralyzed before she was married, also hypochondriacal. Father dead; was said to have been a cripple.

Personal History.—Strong and healthy baby. When 3 years old she had scarlet fever; has been nervous ever since. Pneumonia at 16. Married at 19. One child, 13 years old. For a great many years the patient has been getting more and more nervous. She has been troubled with headaches, cold feet and hands, hot flushes; indefinite pains first on one, then on the other side of the body. "Sometimes the toes of the right foot were stiff and paralyzed." Several years ago she affirms that she was deaf in the right ear. Also complains of poor eyesight. The family physician says that the patient has had several attacks which in a measure suggested epilepsy, but she has never injured herself during an attack and never passed her urine involuntarily, although after the last attack the quantity was greatly increased. Ten years ago the patient began to be greatly disturbed by the presence of dust in her room. She affirmed that she was always busy cleaning. She used to dust and sweep until she was worn out. She recognized that this excessive cleanliness was foolish, but said that ever since she was a girl in school she has been overparticular about her personal appearance and dress. At first she did not think that her efforts at excessive neatness and tidiness were foolish, but this idea gradually dawned upon her. While in the Johns Hopkins Hospital for operation—repair of laceration following labor—she began to feel a constant craving for water to wash her hands in, and used to beg to be allowed to hold wet rags in her hands. After leaving the hospital she frequently felt obliged to hold her hands under the tap in the kitchen. At first this sufficed, but soon she began to think that this flow of water was not

large enough. This impulse to wash her hands has become so strong that when the patient tries to resist it she frequently breaks down and cries. She never uses warm water, but always cold. The symptoms have become so distressing that the patient is willing to do anything to be cured, as she says the impulses at present are so strong that she cannot possibly resist them. She also declares that her heart gives her a great deal of trouble—"It feels as big as my head" and beats very rapidly. She is exceedingly sensitive to noise and excitement and has even been obliged to have the door-bell of her home disconnected, particularly during the period of menstruation. Her appetite is markedly capricious. Sometimes there is polyphagia, when she bolts her food. This is particularly marked during the week before menstruation. At other times the patient eats very little.

Physical Examination.—Medium height, poorly nourished, mucous membranes somewhat pale, exceedingly neurotic, manner suitable, restless. At first she was somewhat reserved in answering questions, but as soon as the ice was broken she became loquacious and then talked a perfect stream about herself. No defects in associative memory were demonstrable. The reflexes were all slightly exaggerated. There was slight tenderness in the right iliac fossa.

Thorax: The lungs and heart were normal.

There was no typical flight of ideas, no marked impulsivity. The patient was very emotional and solicitous about her future, feared that she would never recover, became depressed, and cried easily when her thoughts were directed along this line. She was sent to the Sheppard Hospital and after remaining there for several months was discharged unimproved.

Agoraphobia.—the so-called fear of open places,—another not uncommon symptom, was first described by Westphal.[12] Practically speaking, the term is applied not to an actual fear of open places, as the name would indicate, but rather to a complex series of phenomena due to the strange, indefinable sensations that overwhelm nervous individuals when brought into surroundings with which they are unacquainted and where they feel the lack of that physical and moral support to which they are generally accustomed.

Claustrophobia—the fear of closed places—is exhibited in various ways. Thus some patients are conscious of a vague sense of oppression and apprehensiveness as soon as they enter a public building. In the mild cases this does not become so

[12] Arch. f. Psych., II. 3, 1872.

apparent, provided that the sufferer does not feel that he is placed in a position whence exit is difficult. A distressing tendency to blush is noted in many psychasthenics, and is often sufficiently pronounced to make the patient averse to going into society. In the exaggerated cases it is excited whenever the patient encounters a stranger—eurolophobia. This term must be carefully distinguished from erythrophobia, or the fear of a red color.

Taphophobia—the fear of being buried alive—is also not uncommon. A great variety of other phobias have been described, but need not be mentioned here, since details can be found in the various special works upon the subject.

The so-called *diffused emotional disturbances* are of frequent occurrence and some patients continue in a state of anxious expectancy for considerable periods of time without being able to assign any definite cause for the condition or to control it. This symptom varies in intensity from mere timidity to pronounced apprehensiveness and anxious expectancy accompanied by tremor; it is associated with disturbances in the circulation and respiration, and in some instances with nausea, vomiting, and attacks of diarrhœa. The physiological symptoms noted in these affective disorders have been referred to more in detail in the first section of the book.

The phobias, obsessive ideas, and impulses are particularly apt to recur in the form of crises in which the emotional disturbances are greatly accentuated and the dominating influence of the anomalous condition in some instances becomes overwhelming.

The *obsessional ideas* and *obsessional impulses* cannot be sharply differentiated. Although in all cases in which a dominant idea is present there is a marked tendency towards movement of some kind, the exact instant at which the translation of thought into action takes place cannot always be determined by the observer. For example, in cases in which the impellant idea is one that arouses a sense of fear, there is a marked tendency on the part of the patient to show this in his actions. This driving power is dominant in all forms of ob-

sessions, so that in the majority of cases it is impossible to affirm that an idea which harasses and torments the patient is not sufficiently tyrannical to cause some kind of movement, although the act may be apparently purposeless and not directly related to any motive. The obsessive ideas of suicide, so common in pure psychasthenic states, are seldom, if ever, followed by actual self-destruction. From the forensic standpoint these patients may be considered as only standing on the border-line of insanity. In order that the impulsion may be sufficiently strong to drive the individual to the commission of definite crimes, as a general rule there must be superadded another psychosis complicating the psychasthenic state. The dominating motive force of these impulses is materially less than in hysterical states, with the exception of those of genital origin, which are considered by most authorities to be capable of dominating the volitional processes. Not infrequently obsessions of this nature are the cause of masturbation, both in males and females. In some instances these ideas so persistently annoy and distress the patients as to give rise to anomalous emotional states of depression which in women sometimes become so strong that they demand the removal of the ovaries. Many of the cases of sexual perversion which come under observation are referable to these impulses. Although obsessions of genital origin are among the most common forms, there exists a great variety of others. For example, some patients affirm that they feel compelled to lie and are greatly worried by the fear that they will be unable to tell the truth. Occasionally we meet with instances in which individuals are seriously disturbed by the appearance in consciousness of an impulse to steal. The obsessions which give rise to addiction to drugs, such as morphinomania or dipsomania, often entirely nullify the will power of the patient, despite the fact that individuals afflicted in this way may do their very best and resort to a variety of means to resist the obsession, trying hard to divert their attention or to extricate themselves from all situations which seem to favor the development of the impulse. After the morphin or alcohol has been taken, in all probability

the case becomes further complicated owing to the toxic action exerted by the drugs themselves.

Reference has already been made to the occurrence of *hallucinations* in psychasthenic states. These anomalous sensations possess many of the characteristics referred to in describing other phenomena, and lack the stamp of reality to such an extent that French writers believe they represent an hallucinatory mania and not real hallucinations. The hallucinations very frequently occur as visions. In patients of a low intellectual status these are very apt to be associated with current superstitions and regarded as "signs from Heaven" or "portents of the future." The visual forms are among the most common, and may be associated with sexual ideas. For example, one of our patients used to affirm that she saw a naked man appear before her. Auditory hallucinations are much less frequent, although at times patients are annoyed by queer sounds, the cropping up of certain tunes in their memories, the endless reiteration becoming a source of intense worry.

These phenomena are supposed to have a symbolic relationship to certain objects. At times they seem to the patient to be projected, but are to be regarded rather as the reproduction of memory pictures characterized by incompleteness and cloudiness and not possessing the attributes, such as the form and color, of a real object. Belief in the reality of these phenomena is never marked except at certain critical epochs in their development; during the lucid intervals the patient is thoroughly conscious of their subjectivity. The mental state which may develop as a result of the obsessive ideas and hallucinations is one of doubt, the so-called délire du doute. These sentiments of doubt frequently develop, but at first only in reference to obscure or abstract subjects. Such individuals are particularly worried by religious questions, and the fact that they can not carry through to its conclusion a train of thought is to them most distressing and serves to intensify this uncertainty. This feeling is not, as some writers have held, a special symptom, but is rather the expression of the intellect-

ual state generated by the incompleteness of the mental operations.

It would appear, however, that most writers have spoken too dogmatically in holding that the integrity of consciousness is preserved during the crises, although it is an undoubted fact that even at these times the patients may struggle to free themselves from the thraldom of various obsessions. With regard to this point the psychological phenomena need to be studied more in detail before any sweeping generalizations can be made. Disturbances of consciousness, if they exist, are more difficult of demonstration than is the case in hysterical subjects.

The defects in orientation, that occur and are referable principally to slight disturbances in the sense of recognition, would seem to lend additional color to the view that consciousness is not as intact as has been commonly supposed. Again, it is a noteworthy fact that some of these individuals seem to have a double personality. Patients may affirm that they feel as if they were in another world, that all around them is strange and foreign.

The symptoms already referred to give rise to secondary mental disturbances which are exhibited in anomalies of character and action. Chief among these is the vacillation so characteristic of the psychasthenic when forced to exert himself. Such individuals feel uncertain and are perplexed by their various doubts, so that in addition to the mental or physical fatigue, which so commonly annoys and harasses them, they are deterred from action by the development of an anomalous mental state or are enthralled by a fixed idea relating to their own physical and mental incapacity. Psychasthenics never form a definite resolution, and therefore are unable to act spontaneously; when finally driven by the force of circumstances to exert themselves, they frequently refer to what they do as the mere expression of an automaton or a machine. Conscious that their volitional movements are inhibited, they affirm that they are dominated by a strange and inexplicable power, and many of them are painfully aware of the incompleteness of their intellectual acts, are harassed by their ina-

bility to direct their attention, and become extremely sensitive about their subjective deficiency of perception. The emotional disturbances blend with and color the intellectual and volitional defects, to which reference has already been made. Such individuals frequently affirm that they do not experience the ordinary pleasures of life, that there is little that arouses in them a sense of gratification or pleasure. Frequently they are subject to attacks of mental as well as physical restlessness. Not only is this common during their waking hours, but patients frequently complain that their sleep is disturbed and that they cannot rest well at night. This restlessness gives rise to certain indefinite needs which the patient feels must be gratified. Unquestionably this slight motor restlessness with the accompanying apprehensiveness, as well as the obsessions, plays an important rôle in the cases of individuals who seek for relief in alcohol, morphin, or cocain; these conditions are also favorable for the development of erotic impulses. As an antithetical state we frequently meet with an exaggerated indolence, the patients becoming utterly indifferent to all high aims and ambitions. Another important change which is frequently noticed is the tendency shown towards the development of a misanthropic spirit, which will often explain the so-called social abulia, or disinclination to go into society. Such an individual is inclined to become more or less isolated from his surroundings and lead the life of a recluse. On the other hand, these patients may show an excessive need of the society of others and an abnormal craving for the sympathy of their friends and relatives.

Although there are many theories regarding the cause of these psychasthenic states, there is practically nothing that is definitely known regarding their development. Some observers affirm that the various episodic symptoms, particularly the obsessive impulses, are really secondary, the result of the reaction of the impellent idea upon the emotional life of the individual. The emotional theories are referred to under the section dealing with obsessions. The hypothesis of greatest value in regard to the genesis of the disease is undoubtedly that

recently proposed by Janet and Raymond, in which the apparent unity of the phenomena described in this chapter has been pointed out and the chief factor in the pathogenesis of the mental state is held to be the subjective sense of incompleteness of the mental activity. The lowering of the psychic and nervous tension is assumed to be the fundamental cause underlying all these conditions. The various fluctuations that occur give rise to the differences in symptomatology. The observations of Janet and Raymond have added greatly to our clinical knowledge of this disease. Their studies, as well as those of Freud, have supplied us for the present with working hypotheses which greatly facilitate further investigations.

The course of the disorder varies greatly. In the milder forms, characterized by the symptoms of nervous exhaustion, the condition lasts for a few months, while in the severe or more protracted types, especially in those in which the hereditary predisposition is marked, it persists with more or less variation during the greater part of life. The latter develop, as a rule, in individuals in whom the hereditary factor is present, and follow some exciting cause, such as injury, a severe attack of illness, mental shock, etc. Magnan holds that these psychasthenic states are always to be regarded as stigmata of degeneration. The various manifestations may be considered under the head of the intermittent, remittent, and continuous forms. The last was described by Roubinovitch in 1893, but can not be sharply distinguished from the others.

The *intermittent* form is characterized by the various episodic symptoms to which reference has already been made. They generally develop whenever some exciting cause, such as increased mental or physical fatigue, intervenes, or follow emotional disturbances. Not infrequently long remissions may occur in the forms in which the obsessions and phobias have for a considerable period of time seemed to dominate every thought, while in other cases the disturbed and more lucid periods alternate rapidly. Exacerbations may occur daily, weekly, or at much longer intervals. The temporary improvement noted in these cases may be very remarkable, and close

study of a given case occasionally renders us able to predict an amelioration. For example, Janet calls attention to the interesting fact that the psychasthenic symptoms frequently disappear during pregnancy.

In the *remittent* forms, although the symptoms already enumerated show a marked tendency to remit, they never entirely disappear. Quite frequently the color or form of the obsession, as well as the other psychic abnormalities, may change, but the emotional state of the patient can never be said to be quite normal. Even when the episodic symptoms have practically subsided there are left behind a certain degree of listlessness, a general impairment of the volitional processes, a lack of initiative, and a lowering of the whole psychic tone.

Apart from the physical complications to which reference has been made, the mental symptoms may terminate in one of several ways: (1) The neurasthenic state may become chronic and extend over a long period of years. (2) The more or less stable symptoms of chronic nervous exhaustion may be complicated by the appearance of the episodic symptoms. (3) The hypochondriacal and other obsessions may become chronic and systematized so that we have conditions resembling some of the elementary paranoiic states. In certain cases the symptoms may entirely disappear, and the patient is said to be cured. The disease may be slowly progressive, but after a certain point is reached the symptoms may never become much worse, and remissions may frequently occur. In rare cases the obsessions and impulses become exaggerated, and late in the disease other psychoses complicate the clinical picture.

The *prognosis* in the *episodic forms* is much more unfavorable than in the other types; in fact, it may be said that a cure is seldom, if ever, effected. There are competent observers who maintain that the forms connecting this with other forms of alienation practically never occur, but the general consensus of opinion favors the view that transitional states between the chronic nervous exhaustion and true melancholia are found in about 2 or 3 per cent. of the cases. In these we have a neurasthenic complex of symptoms with considerable

irritability, and, in addition, imperative ideas and a marked tendency on the part of the patient to try and establish relationships between the various abnormal sensations.[18]

Attention has been called to the fact that some cases, particularly those in which the abnormal scrupulosity (*délire du scrupule*) is well marked, may end in states of exaltation which are closely akin to, if not identical with, the mystic delirium common in hysterical individuals.

Various other forms of disturbances in the field of consciousness with and without more definite symptoms of alienation have been described by numerous observers. Cases in which marked mental confusion and deep stupor have been reported must be regarded with suspicion, as in all probability these form a part of other psychoses.

Physical Symptoms.—A great variety of objective symptoms have been noted, but the exact relative importance of these phenomena can not be accurately estimated. They are, however, so frequent and of such intensity as to warrant the affirmation that these psychasthenic states should no longer be looked upon as instances of purely mental disturbance, in the ordinary sense of the word. The mental anomalies, such as the obsessions, states of apprehensiveness, and so on, are nearly always accompanied by a variety of symptoms which seem to indicate the existence of some impairment of the nervous functions. In the more chronic cases we meet with various forms of neuralgias and other painful conditions. The attempt has frequently been made to bring these anomalies of sensation into relationship with the supposed disturbances in the circulation. In view of the present limitations in our knowledge, however, such an hypothesis may be regarded as scarcely plausible. It is interesting to note in passing that some observers have attempted to demonstrate the existence in neurasthenics of a definite rise of temperature associated with the attacks of severe headache, but the patients usually exaggerate the

[18] Friedmann. Ueber Neurasthenische Melancholie. Neurol. Centralbl., 1903, Nr. 2, S. 1155.

trouble. Insomnia is not infrequent. On the other hand, now and again we meet with markedly neurasthenic individuals, more especially among those that have a gouty or rheumatic diathesis, who never seem to be able to get enough sleep; who are victims of a marked degree of somnolence and who often sleep for ten or twelve hours at night, with occasional naps during the day. These prolonged periods of sleep, however, may be broken by dreams of a disturbing character, giving rise to many unpleasant sensations. In nearly all neurasthenic or psychasthenic states, all the reflexes, more particularly the superficial, are apt to be increased in intensity. Dermatographia is commonly a prominent symptom. Cases are reported in which the ankle and patellar clonus have been elicited, but these should be viewed with suspicion, and the possible existence of a cord lesion must always be remembered. The pupillary reflexes are, as a rule, very active, at times a marked hippus being present. In the states of chronic nervous exhaustion the pupils are apt to be quite widely dilated. The nutrition of these patients generally suffers considerably. A great many of them are poorly nourished and more or less anæmic. Nevertheless, others show an excess of adipose tissue and may become exceedingly stout. As a rule, the hæmoglobin is somewhat reduced in quantity. The appetite, in states of hysteria, is often very capricious. At times these individuals eat practically nothing, while again they may exhibit an abnormal craving for food and remarkable idiosyncrasies of taste. Some observers maintain that the digestive disturbances of the neurasthenic are dependent upon deficient secretion of the gastric glands, and still more often motor insufficiency of the gastric muscle, as a consequence of which the contents of the stomach are not discharged within the normal time and gastric fermentation and certain forms of autointoxication result. Undoubtedly many cases of nervous dyspepsia are quite amenable to suggestion, and the emotional state of the patient at the time that the food is taken is a very important factor in digestion. Moreover, with the gastric disturbances are associated others of intestinal origin, the most

important being diarrhœa and constipation, which often alternate.

The nutritional defects become more evident in the cases in which there is a lithæmic or a gouty diathesis. The urine of these patients, however, is not at all characteristic, and analyses furnish no clues which would serve to explain the accompanying mental conditions. Even the observations regarding the general diminution of the urea and the increase of uric and phosphoric acids are questionable. The same may be said regarding the presence of indican and skatol.

Abnormalities in the circulation in neurasthenics are very common. Associated with the vasomotor disturbances, to which reference has already been made, we not infrequently find a tachycardia. Bradycardia is sometimes noted, but when this sign is marked and persistent, it can usually be accounted for by the existence of some complication. The pulse is often irregular, both in force and rhythm. Some observers, particularly De Fleury, affirm that in a large number of neurasthenics there is a hypertension, and look upon the symptoms of the disorder as evidences of an autointoxication.

The changes in the circulation occurring during the episodic symptoms have been spoken of in the introductory section. There are no marked abnormalities affecting the respiration excepting during the periods of excitement or anxiety. Certain observers have called attention to the frequency of cutaneous lesions in cases of psychasthenia, more particularly various forms of eczema, and not uncommonly seborrhœa, absence of tears, and rhinorrhœa. In women disturbances of the menstrual functions are common.

As has already been pointed out, there is no disturbance in the muscular power for sudden spasmodic effort, but the symptoms of fatigue appear very early, and the sudden fall in the curve representing the dynamic power of the muscle is nearly always a constant symptom.

Differential Diagnosis.—The recognition of neurasthenia is frequently beset with many difficulties. Neurasthenic states are encountered in the early stages of the more acute

psychoses, as well as of dementia præcox, dementia paralytica, hysteria, and manic-depressive insanity. In *hysteria*, as a rule, the occurrence of the typical attacks, the motor spasms, the paralyses, and the fairly characteristic disturbances of sensation are differential points. Again, the hysterical states are more apt to be characterized by a number of definite symptoms and a more or less complete obliteration of certain functions with an exaggeration of others. In psychasthenia there are no complete lacunæ in sensation, memory, or in the motor functions. It is this characteristic of the hysterical manifestations which stamps the phenomena as automatic, and gives to the motor disturbances, impulsions, and other motor symptoms a regularity in rhythm, which is not noted in other diseases (Janet). The cases in which obsessional ideas and impulses are present may frequently give rise to considerable difficulty in differentiation, and the absence of true hysterical stigmata is frequently the only means of arriving at a positive diagnosis.

Not uncommonly the initial stages of *dementia præcox* are characterized by the appearance of psychasthenic symptoms which may last for a considerable period of time before the development of the stereotypies, mannerisms, and explosive-like impulses. Cases strongly suggestive of neurasthenia, but developing in young persons, particularly girls, at or about the time of puberty, and accompanied by very severe attacks of migraine, with a tendency at times to a mild degree of emotional apathy, should at once give rise to suspicions regarding the existence of dementia præcox. The psychasthenic states, in which the impulses are prominent, are usually characterized by a certain degree of emotional instability, but the idea in consciousness and the objective expressions of the emotion are likely to correspond. The dissociation of these two factors, as has already been pointed out elsewhere, is characteristic of dementia. Furthermore, in psychasthenia, the condition is more stable and psychic hallucinations are absent.

Not infrequently, for a short period of time, in the very early stages of an attack of *manic-depressive insanity*, the

symptoms may be suggestive of psychasthenic states. The differentiation, however, should hardly prove to be very difficult if the patient is kept under close observation for several days, except in the very mild cases and during the period of depression. But even here it will be helpful to remember that the neurasthenic usually retains a much clearer insight into his own condition and shows no evidence of psychomotor retardation. The physical state in psychasthenics remains practically unchanged, whereas in the manic-depressive conditions the patient is apt to show a more or less sudden loss of weight and not infrequently considerable disturbances in the gastro-intestinal tract.

It often happens that the initial stages of *paresis* can be distinguished from psychasthenic states only with the greatest difficulty. Here a complete history of the patient is of the greatest possible value. In individuals who prior to middle life have never experienced any nervous breakdowns and who have enjoyed good health, the appearance of a psychasthenic condition, especially if there does not seem to be any immediate cause for it and if it be protracted, should at once make us suspect a developing dementia paralytica. This suspicion becomes stronger if, in addition to the symptoms of chronic nervous exhaustion, signs of ethical and social defects in character become at all prominent. The appearance of temporary paralyses of the eye-muscles, of incoördination in the facial movements, of some difficulty in speech, or a slight impairment of the light reflexes are frequently sufficient grounds for leading the physician to believe that he is dealing with a case of paresis, and not one of psychasthenia. The same is true in regard to the occurrence of attacks of vertigo associated with temporary aphasia and an increase in the difficulty of speech. In psychasthenia the clinical memory tests are much less apt to reveal the existence of positive defects than is the case in dementia paralytica.

Disturbances in the emotional life of the individual in psychasthenia are much more apt to be the result of excessive reactions to stimuli from without or of mere transitory im-

pulses than of actual defects in judgment, as is so frequently the case in dementia paralytica. Again, insane ideas are much more characteristic of the latter than of the former condition.

In the early stages of various *acute psychoses* we not infrequently meet with symptoms which also belong to chronic nervous exhaustion or the typical psychasthenic states, but in the former these usually give way in a few days to the more pronounced manifestations of alienation.

Etiology.—The inciting causes of the majority of cases of neurasthenia are too numerous to receive mention here. In regard to the factors that primarily give rise to the episodic symptoms little definite can be said. Loewenfeld cites the following causes as provocative of states of apprehensiveness, and these same agents doubtless play an important part in the genesis of the episodic symptoms: (1) A predisposition, the result of abnormal heredity, which serves to accentuate the effect of inciting agencies. (2) Essential or more immediately operative causes, either somatic or psychical. Among the former are classed the sexual, and among the latter the emotional disturbances. (3) Accessory causes that may temporarily interfere with the functions of the central nervous system.

Treatment.—In the treatment of neurasthenia a great deal of good may be accomplished by the complete or modified rest-cure (see chapter on Treatment), but in the episodic forms an amelioration of the symptoms is practically all that can be hoped for. As has already been pointed out, the hereditary factor is so dominant that prophylaxis becomes a question of vital importance. Unfortunately, psychasthenics may be the product, not of one, but of several generations; and although in an advanced state of society it might be possible to eliminate many of the hereditarily predisposed individuals by requiring a medical certificate permitting parties to marry, this desideratum could not be attained until the procedure had been in force for many years. The danger of consanguineous marriages has been frequently emphasized, as the children of such parents are particularly apt to develop marked psychasthenic states, particularly if there have been anomalous traits of char-

acter in the family. Another important danger noted by numerous observers is the fact that marriage, not only between members of an undesirable family, but between the members of families who have for several generations been devoted to the same pursuits, is fraught with danger. Thus, in the case of marriages of individuals belonging to highly intellectual circles, particularly the university sets, the children seem to exhibit an exaggeration of mental idiosyncrasies and traits similar to those possessed by the parents. This fact provides one of the strongest arguments against the excessive education of women, particularly in this country. There can be little question that when the women have the same intellectual aims and ambitions as the men the tendency towards the development of peculiarities of character, anomalies of emotion, and mental tics is strongly accentuated in the children. As has frequently been noted, there is a remarkable tendency shown in the families in whom gout is present to the development of psychasthenic states in the children. Prophylaxis in these cases would necessitate more simple nourishment on the part of the parents, the giving up of alcohol in any form, and a more rational out-door life. In families in which the parents are devoted to purely intellectual pursuits it is important that the children should be removed as far as possible from the tendency to what the French call "mental rumination." From an early age they should be accustomed to interest themselves in manual labor, in out-door sports, but not to excess; they should never be forced at school, nor should any mental exercises be encouraged if the child shows a tendency to become isolated from its companions or to indulge in flights of fancy or speculation. Everything should be done to encourage in the child a healthy social character. On the appearance of abnormal symptoms—excessive embarrassment, precociousness, or a tendency to hold aloof from companions—the child should be removed from its surroundings, and, if possible, sent to the country or to some boarding-school where the mental régime is less strenuous and every opportunity is given for the cultivation of a healthy nervous system. Above all

things, the children should not be taught to interpret pleasure merely as being the absence of pain or discomfort. Particularly harmful are all the tendencies which encourage in children introspection, and equally undesirable are the various forms of so-called religious instruction which are frequently inflicted upon young people. Coming, as they do, at a time when there is need of self-restraint and the exercise of the normal reasoning powers, they tend to substitute the play of the emotions and to inculcate the dangerous principle of being guided by impulse and by what the individual without reflection believes to be the proper course.

CHAPTER XIX

PSYCHOSES ASSOCIATED WITH ORGANIC DISEASE OF THE CENTRAL NERVOUS SYSTEM.[1]

Disturbances in the mental functions associated with organic *lesions* in the central nervous system are not very uncommon, prominent among them being the psychical anomalies described in connection with the following disorders:

Multiple Sclerosis.—With the earlier stages of this disease are sometimes associated a variety of neurasthenic symptoms which give rise to difficulties in diagnosis. At times these manifestations of fatigue, both mental and physical, are present for a considerable period of time before the tremor, disturbances of speech, or other more or less distinctive signs make their appearance. Occasionally marked disturbances in the affective life of the individual are noted and the patient is subject to ungovernable outbursts of temper, which sweep over him with little provocation and which, after they have passed, may occasion a genuine sense of remorse. As a rule, the patient retains an insight into his own condition; he appreciates that he is ill and that the nervous and mental disturbances are the result of the disordered functioning of his nervous system. In some instances these symptoms are slowly progressive, in others they are remittent, and the patient may show a temporary improvement sufficiently marked to excite general comment among his friends. The mental disturbances and the physical signs are not proportional, sometimes the former, in other cases the latter, predominating, and they seem to bear no definite relationship to each other. As a rule, in the early stages, when the neurasthenic symptoms are marked and when

[1] Hunt, J. Ramsay: Multiple Sclerosis with Dementia: A Contribution to the Combination Form of Multiple Sclerosis and Dementia Paralytica. Am. Journ. of Med. Sci., December, 1903. Dupré, E.: Psychopathies organiques. In Ballet's Traité de Pathologie Mentale, Paris, 1903.

the insight is well retained, the emotional tone is one of depression, but later on this may be lost, and the patient, becoming more or less unconscious of his abnormal state, shows evidences of some slight euphoria, a condition that is characterized by an increased sense of well-being and a certain boastfulness which in a measure are suggestive of dementia paralytica.[2] In addition to the defects already noted, impairment of associative memory is frequently a prominent symptom, and this may give rise to slight disturbances in orientation, the latter, as a rule, being less pronounced than in general paresis. The mental symptoms, as has already been pointed out, generally develop more or less irregularly, although in some cases considerable impairment of the various faculties is noted. As a rule, certain functions remain unaffected, and in this respect the mental condition in multiple sclerosis differs essentially from that observed in dementia paralytica, where practically there is an involvement of all the psychic functions. The multiplicity of the symptoms which may occur in the sclerotic process and the frequent difficulty that is experienced in establishing a positive diagnosis have been particularly emphasized by a number of investigators.[3]

The pathological changes in the central nervous system can not be discussed in detail here. Although the sclerotic areas are occasionally noted in the cerebral cortex, they are much more common in the white matter as well as in the basal ganglia and cerebellum.[4] When, as sometimes happens, sclerotic changes are present in the corpus callosum, many authorities hold that they are of great significance in the pathogenesis of the mental symptoms. Nevertheless, other factors, such as autointoxication, must be considered, and it is improbable that these areas are the sole cause of the dementia, since the study

[2] Starr, M. Allen: Organic Nervous Diseases. New York and Philadelphia, 1903, p. 701.

[3] Philippe, Cl., et Castan: Mémoire déposé pour le prix civrieux à l'Académie de Médecine. Dannenberger: Inaug. Dissertation, Giessen, 1900.

[4] Philippe and Jones: Etude anatomo-pathologique de l'écorce cérébrale dans la sclérose en plaques. Soc. d. Neurol., 1899.

of the cellular elements in these cases has brought to light a more or less general involvement of all the cortical cells, in some instances amounting to a pigmented atrophy.

Amyotrophic Lateral Sclerosis.—Mental disturbances in this disease have been reported by a number of writers. Mott, Spiller,[5] and other investigators have called attention to the fact that in these cases there may be demonstrable changes in the cerebral cortex. The mental symptoms are not in any sense specific, and, as a rule, develop after those depending upon the lesions have become so pronounced that the former may be regarded as secondary in importance.

Apoplexy.—Mental anomalies may either precede or follow a cerebral hemorrhage. When they occur as prodroma they often consist merely in nervousness, considerable emotional irritability, and varied disturbances in associative memory. Sometimes the patients become unusually irritable; they are subject to outbursts of temper or may be markedly hysterical, laughing and crying apparently without any provocation. Following the attack, various manifestations are noted. The extent and severity of these are not at all proportional to the physical symptoms, nor, with a few exceptions, do they seem to be influenced by the location of the lesion. Starr's[6] experience agrees with that of Seguin and Brissaud, that when the lesion is in the right temporal lobe the loss of emotional control seems to be more marked than when located elsewhere. The intensity of the symptoms varies greatly, from a mild degree of apathy to attacks of maniacal excitement with impulsive acts of various kinds. Then, as is often the case, the changes are progressive; the mental enfeeblement becomes more and more pronounced until a profound dementia supervenes. But it must be remembered that the mere local lesion is not in any sense the immediate cause of this general mental impairment, but unquestionably other causes, such as arterial

[5] A case of amyotrophic lateral sclerosis. A contribution from the Pepper Laboratory of Clinical Medicine. Philadelphia, 1900.

[6] Op. cit.

changes or areas of softening, are subsidiary factors. The attacks characterized by hysterical symptoms are not at all infrequent; the patients burst into laughter or tears without any or on very slight provocation, and are unable to control their emotions. Associative memory is nearly always impaired, the defect being sometimes general and at other times isolated, certain functions being well preserved while others are more or less completely lost. The insight retained by the patient into his own condition varies greatly and depends upon a number of circumstances. In some instances the individual appreciates to a remarkable extent the nature of his trouble, in others not at all. The character of the dementia that frequently develops in these cases can not be distinguished from that occurring in the arteriosclerotic or in the senile forms of alienation.

The relation of tabes to dementia paralytica and the occurrence of mental symptoms during the course of the former disease are subjects that are discussed in Chapter XV.

Meningitis.—Mental symptoms are frequently observed in cases of meningitis. In the first place, there may be merely the clouding of the consciousness or the disturbances in organic sensibility which are common in any febrile disease. In other cases, particularly in epidemic cerebrospinal meningitis, as well as in the septic, tuberculous, and syphilitic forms, there may be all grades of deliria varying from the mildest type already referred to to the most pronounced maniacal excitement in which the patient is kept in bed only with the greatest difficulty. In these severe cases, in addition to the clouding of consciousness, fallacious sense perceptions, which vary greatly in character, are quite common. Sometimes the visual forms predominate; at other times they are associated with auditory and somatic hallucinations. The degree of fever and the mental aberration are by no means always parallel. Even with a relatively low temperature certain patients show a marked tendency to become wildly delirious, whereas in other cases, despite a marked degree of hyperpyrexia, the mental faculties are remarkably well preserved. In some instances early in the disease there are evidences of well-defined local lesions, whereas

in others the infection seems to be of a more general type and the mental symptoms predominate. Clinically, we have to distinguish between the meningitis which occurs as a primary uncomplicated disease and those forms which complicate other disorders, such as dementia paralytica, senile psychoses, alcoholism, etc.

Brain Abscess.—Localized collections of pus in the brain, in addition to the physical signs, are not infrequently attended by a variety of mental symptoms, none of which, however, are in any sense to be regarded as specifically characteristic. In some instances there is merely a mild degree of motor restlessness or the patient becomes excessively irritable, while in other cases there are varying degrees of apathy or stupor. Cases have been recorded in which the abscess was attended by symptoms of marked depression or by degrees of motor restlessness and exhilaration which simulated a true mania. In the instances in which the history of infection is obtained and where there are localizing symptoms as well as febrile disturbances the diagnosis is not difficult, but in the more protracted cases, where the abscess becomes encapsulated and the mental symptoms are the most dominant clinical feature, a diagnosis frequently can only be made with the greatest difficulty, and in some instances the real cause can not be recognized without an autopsy.

The mental disturbances associated with thrombi or emboli in the cerebral vessels do not, as a rule, depend upon the local disturbances, but are referable to a number of factors that cannot be appropriately discussed here.

Brain Tumors.[1]—Not all tumors of the brain cause symptoms of a sufficiently pronounced character to render their recognition easy. As can readily be gathered from the literature, even large tumors have been found at autopsy in the central nervous system which during life had caused no noteworthy manifestations. On the other hand, relatively small

[1] Schuster, Paul: Psychische Störungen bei Hirntumoren. Stuttgart, 1902.

neoplasms may give rise to marked local disturbances as well as to a more or less general impairment of all the mental faculties. In the face of these apparently contradictory facts, as well as for other reasons, it is often impossible to determine how far the symptoms of alienation are directly due to the presence of a tumor, and in the majority of cases the mental defects must doubtless be regarded as secondary manifestations. It would be interesting and of great practical importance to determine in what percentage of cases a well-marked alienation develops directly as the result of a neoplasm in individuals who are not hereditarily predisposed towards alienation. Thus in 73 patients Schuster affirms that in only 10 per cent. were there evidences of a marked predisposition shown by the occurrence of mental abnormalities—particularly nervousness and a tendency to alcoholism—prior to the development of the tumor. As has already been pointed out, the growth of the tumor is not so uncommonly accompanied by a marked degree of mental aberration. In some cases this amounts merely to disturbances in the affective life. The patients become easily fatigued and display a considerable degree of distractibility. They are easily irritated and may be subject to violent outbursts of temper. In younger individuals, on the other hand, apathy, distractibility, and in some instances lethargy and somnolence are more likely to occur. Outbreaks of delirium are sometimes noted, but when these occur the possibility that the tumor is complicated by the development of some independent psychosis should not be lost sight of. Schuster and others have shown that the tumor may simply be a factor of secondary importance when it precedes an attack of manic-depressive insanity, dementia præcox, amentia, etc. Sometimes, however, it may in a way precipitate the alienation by lowering the mental and physical resistance of the patient, and because its presence may cause an actual circulation in the blood of toxins which may give rise to certain delirious states.[8] As a rule, except in the case of the frontal lobe tu-

[8] Wollenberg: Centralbl. f. Nervenheilk. u. Psych., 1903, Bd. xxvi, N. 156.

mors, the location of the neoplasm does not give a specific stamp to the mental symptoms. The great variety of recorded mental disturbances observed in cases of brain tumor will appear from the following table from Schuster's work:

	Total	Heredity	Predisposition	Alcoholism
Excitement	95	5	4	8
Melancholia	57	3	5	...
Delirium and confusion	52	2	2	...
Dementia paralytica	29	5	1	5
An abnormal tendency to jest	23	...	1	2
Paranoic states	19	4	2	2
Neurasthenic states	15	2	5	...
Mania	13	2	3	...
Moral insanity	7	3	3	2
Circular insanity	5	1	1	...
Simple mental weakness	425	7	2	5

MENTAL DISTURBANCES ASSOCIATED WITH ARTERIOSCLEROSIS.*—Not only have recent investigations added materially to our knowledge regarding the pathological changes taking place in the central nervous system as the result of vascular sclerosis, but considerable advance has also been made in establishing a closer relationship between some of the lesions and the symptoms. For this reason it has been considered advisable to change the order hitherto followed in the description of other diseases, so as to emphasize as much as possible the importance of the alterations in the central nervous system as the determining factor in the development of the clinical picture.

Meyer has called attention to the fact that the nervous system may suffer in three ways as the result of arteriosclerosis: (1) there is a reduction or marked change of metabolism

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*Koppen: Arch. f. Psych., Bd. xx, S. 891. Binswanger: Berl. klin. Wchnschr., 1894. Alzheimer: Allg. Ztschr. f. Psych., 1895, Bd. 51, S. 809. Monatsschr. f. Psych. u. Neurol., Bd. iii. Centralbl. f. Nervenheilk. u. Psych., xxv Jahrg., Nr. 149, Juni 15, 1902, S. 399. Noisin et Cuyot, Union méd., 1869. Meyer, Adolf: Albany Medical Annals, vol. xxiv, No. 3, 1903.

due to the arteriosclerotic disease in one or more organs; (2) the changes in the nervous system are directly the result of disturbances in the vascular mechanism; or (3) there may be a lowered metabolism due to a state of exhaustion caused by the action of toxic substances.

The forms of alienation associated with this disease are more common after the fiftieth year of life, but they are not infrequently present at the fortieth year or even earlier.

An example of mental disturbance with arteriosclerosis, as it is sometimes seen in young people, is given in the following abstract from the history of a case, for which I am indebted to Dr. Cary B. Gamble, Jr.:

Patient, white; male; aged 22.

Family history good, except that the patient's father died of tuberculosis.

Personal History.—Denies lues and has no scar or enlarged glands. Five years ago the patient had a moderately severe attack of typhoid fever, from which he convalesced rather slowly. For the past two years he has been unable to fasten his attention long upon any one subject and frequently becomes greatly depressed, and fears that he is going insane. Memory for past events is well preserved, and there is no evident dissociation in thought. About a year ago the patient began to complain of unpleasant dreams, always occurring when he was half awake. The content of the dream always had reference to the same subject; he thought he was fighting with a gigantic snake, and always experienced a sense of great relief when he awoke. Within the past two or three months this idea has persisted after waking, and the patient fears that the snake may be real, and that it is concealed under his bed or somewhere about the room. On being assured that the idea about the snake was merely the product of his imagination, he at first assented, but later said that he was unable to get rid of the idea. With the exception of the marked depression he has shown no other mental symptoms. On examination his arteries were found to be in a remarkable condition of sclerosis, being uniformly thickened, and traceable high up in his arm. The cardiac impulse was in the anterior nipple line, and there was a marked accentuation of both sounds. Blood-pressure 200. Urine negative.

In the great majority of cases that come under observation, particularly in hospitals, the general disease is so far advanced and affects so many organs that there is little difficulty in referring any symptoms of alienation that may be present to these changes. At such a time it is difficult to

accomplish much in the way of treatment, and for this reason the need for making a diagnosis at a much earlier period is evident. Hence it follows that a more general appreciation of the premonitory signs on the part of the family physician would unquestionably avert serious disaster in not a few instances.

In cases in which there are evidences of nephritis, diabetes, enlargement of the heart, or changes in the arterial walls, the existence of a concomitant sclerotic process in the central nervous system is probable. On the other hand, when the sclerosis is limited to the central nervous system its recognition is far more difficult. Some of the more important of the clinical signs of the malady are seen in the milder types of the disease, generally referred to as "the nervous forms." These cases are not uncommon in both men and women after the fortieth year. The patients complain of fatigue, both mental and physical; they recognize the fact that they can not fix their minds long upon one subject; they are subject to neuralgias of various forms, which occasionally suggest attacks of migraine. In many instances there is a singular subjective feeling, nearly always present, of loss of memory. The patients complain that they can not remember well, but on careful examination it may be impossible to prove the existence of a positive defect. This subjective sense of difficulty in recalling past events is nearly always present. Sometimes positive defects in memory, particularly for figures and names, may be demonstrated. Cramer has called attention to the fact that in many instances associated with these initial symptoms at times there is a marked intolerance for alcohol. Patients complain of an inability to understand what is said to them. This is particularly true if the subject is at all involved and not clearly stated. Slight temporary motor or sensory aphasias may be present. The patients, as a rule, show some irritability; they do not like to be crossed, to have people differ from them. At times they develop even a vague suspiciousness. They feel that their old freinds are leaving them. They lose confidence in themselves, are oversensitive in many ways, think that their

acts are noted and criticised adversely by friends as well as by strangers. In some instances there is a marked dulling of the moral sense. This gives rise to sexual irregularities,—masturbation, assaults upon children, etc. Again, the finer sensibilities may be lost or there may be a tendency to become obtrusively egotistical. The one symptom which is very characteristic of all this group of cases consists in the remarkable insight that such patients have regarding their own condition. Up to a certain degree they are able to appreciate and estimate the value of their symptoms. They recognize the psychical hyperæsthesias as abnormal. Personal characteristics in a measure determine the clinical picture. The patients frequently complain that if the symptoms persist they will lose their minds. Up to a certain point they are rational. They are willing to admit that they are not bereft of will power, they express the desire of doing everything in order to recover, but they continually harp upon the fact that if their disorder does not abate they will be driven insane. Individuals displaying these symptoms are met with in private practice, but in these early stages are seldom found in institutions.

The *diagnosis* is frequently difficult, as the evidence of general sclerotic changes may be absent, although sometimes the finding of sugar in the urine may indicate their presence in the central nervous system. The process in some cases may progress slowly and pass on into the second stage. The patients not infrequently die of some intercurrent trouble or there may be a long period when the symptoms are more or less stable. In other cases the onset is followed by a greater rapidity of progression, the emotional disturbances are more prominent, positive defects in memory are present, the attention is greatly impaired, and the subjective sensations are, as a rule, intensified. Hallucinations and insane ideas may complicate the clinical picture. Observers differ regarding the occurrence of megalomania. Periods of intercurrent excitement may come and go. Sometimes mental depression is the chief feature in the case. The patients have a woe-begone appearance, sit in a far corner of the ward with the eyes fixed upon the

ground and the corners of the mouth often slightly drooping. They complain of being ruined, of having committed flagrant sins for which they can not be forgiven. They affirm that it is wrong for them to be in the hospital, that they do not deserve such good treatment, that they should be killed, even tortured, on account of their wrong-doing. In some cases they adhere to these ideas with great tenacity, while in others they can be diverted temporarily. Emotional instability is often present and fits of laughing and crying often alternate. In some cases interest may be suddenly aroused by the visit of a friend or by the occurrence of a sudden and unexpected event, but this change is only transitory. There may be marked motor restlessness, which displays itself in various ways. Sometimes the patient will wander aimlessly about in a fairly good-humor until an attempt is made to restrain him, but then he becomes violent. Such persons not infrequently exhibit a curious tendency to collect various articles or objects lying about the wards or that have been gathered by them on their walks about the hospital grounds. Transitory delirious states are not at all infrequent. At first these are of short duration, but as the disease progresses they become longer and the delirium is more constant. The focal lesions which may occur during the course of the cases are not, as a rule, responsible for the mental symptoms. This fact is particularly important, and should be borne in mind more especially in connection with the post-apoplectic dementias. In reality the symptoms of alienation are referable to the accompanying arterial changes. In these severer cases the patients still preserve a remarkable insight into their own condition.

In some instances the symptoms displayed during the course of the disease are of forensic importance. Patients suffering from a mild degree of arteriosclerosis, with symptoms of alienation that are apparently out of proportion to the physical changes, not infrequently are brought before the courts for having committed acts of violence. Various forms of assault, theft, arson, the infliction of injury upon members of the family or friends without any provocation, etc., have been reported.

Our knowledge regarding the mental diseases associated with arteriosclerosis practically dates from the early attempts made to differentiate the spurious from the typical cases of dementia paralytica.[16] Klippel, in 1891, described his *pseudo-paralysie générale arthritique*, a condition essentially the same as cerebral atrophy due to arteriosclerosis. In 1894 Binswanger described the cerebral cortical atrophy associated with vascular disease, and pointed out in this connection certain facts which were supposed to be important in the differential diagnosis of the two conditions. In reporting these investigations he referred to the occurrence of a diffuse chronic subcortical encephalitis. About the same time Alzheimer described a condition to which he gave the name of perivascular sclerosis. In these studies he emphasized the important clinical fact that although there might be marked sclerotic changes in the vessels of the central nervous system, the process was absent or only present to a limited degree in other organs. This important fact renders the diagnosis in many instances extremely difficult.

In the milder cases one finds occasionally small areas of softening with general dilatation of the perivascular spaces and an increase of the glia. The ganglion cells show marked pigmentation, but, as a rule, the medullated fibres are intact. The vessels show the characteristic arteriosclerotic changes. In the glia a few spider-cells are found, but compound granular corpuscles are, as a rule, absent.

In the second group of cases there is generally a marked diminution in the weight of the brain and dilatation of the ventricles; the white substance has a curious gray appearance, and not infrequently many miliary aneurysms are found. The ganglion cells as well as the fibres are little altered. The arteriosclerotic areas may be numerous; there is marked increase in the spider-cells; compound granular corpuscles are

[16] Alzheimer: Centralblatt f. Nervenheilk. u. Psych., xxv. Jahrgang, Nr. 149, 15 Juni, 1902, S. 390. Idem: Histologische Studien zur Differentialdiagnose der progressive Paralyse. Nissl, Franz: Zur Histopathologie der paralytischer Rindenerkrankung. Histolog. u. Histopathol. Arbeit. über die Grosshirnrinde. Herausgeg. von Fr. Nissl. Bd. i. Jena, 1904.

generally present. Alzheimer distinguishes the following conditions:

(1) A chronic subcortical encephalitis first described by Binswanger. Only the deeper fibre tracts are affected, and the cortex proper is practically intact. In these cases, in addition to the psychical symptoms noted, as a rule, various disturbances occur that point to local lesions. The differential diagnosis between these and certain atypical cases of dementia paralytica is frequently difficult. With the exercise of great care and a careful study Alzheimer believes that it is possible to diagnose such cases during life. In the cases of atypical paresis, as a rule, there are evidences which point to the existence of a more general destructive process than is the case in patients affected with arteriosclerosis. In this latter group of cases the lesions may be limited to one or more convolutions and the process may be more intense in one area than in the other, but the tendency is for the symptoms referable to focal lesions to become prominent in the clinical picture. This is equally true in regard to the psychical anomalies. In the senile dementias as well as in the cases of dementia paralytica there is a general impairment of the intellectual faculties. In the cases of arteriosclerosis, on the other hand, some psychical functions may be intact, while others are markedly disturbed. As has been pointed out, cases of arteriosclerosis by their symptoms suggest the occurrence of focal lesions and to the casual observer are more plainly indicative of organic brain disease than are many cases of senile or paralytic dementia. The cases of senile dementia with focal lesions are frequently as difficult to distinguish from true arteriosclerosis as are some of the atypical cases of paresis. In the former group of cases, as Alzheimer affirms, it is possible to obtain glimpses, as it were, of conditions which are more or less characteristic of senile dementia and which indicate the presence of a general rather than a localized cortical lesion.

(2) A destructive process more or less limited to the cortex. The focal areas are wedge-shaped with the base of the wedge external. These areas are occupied almost exclusively

by a thick glia network. The longer association tracts are intact. Along some of the capillaries there are evidences of beginning softening.

(3) Here we have to do with a perivascular gliosis. In the cortex, as well as in the deeper portions of the convolutions, we meet with circumscribed areas in which the nerve-cells have been destroyed and replaced by a marked increase in the glia. These areas usually correspond with the regional distribution of the affected arteries. An important symptom in differentiating these cases from the dementias is the so-called senile epilepsy. The clinical forms recognized are generally two—one in which the psychical aberration during or following the attack is not great and the symptoms are apparently due merely to local disturbances in the cortical circulation; in the other group of cases evidences of marked focal lesions are more prominent. Following an attack there are evidences of paralysis, narrowing of the field of vision, etc.

In these milder forms of the disease the diagnosis rests largely upon the nervousness, the psychical and physical fatigue, headache, the subjective disturbances of memory, attacks of vertigo, and the tendency to remissions. The period at which the sclerotic process begins varies in different individuals and depends upon many causes. A general discussion of this subject can not be entered upon here. Suffice it to say that aside from the ordinary factors enumerated, such as syphilis, alcohol, etc., there seems to be in certain families a marked predisposition to these diseases of the vascular system. Moreover, in certain localities the disease is more common than it is elsewhere.

The severer cases, especially when the symptoms of alienation are at all marked, are much better off in an institution where they can be properly cared for. The bodily weight should be carefully watched. If there is a marked decrease, the patient is better off in bed. The diet should consist largely of milk. The periods of excitement may be benefited by prolonged baths. The administration of as few drugs as possible is indicated. Insomnia may sometimes be relieved by giving

the patient a lukewarm pack when the bath is not indicated. This may be followed by some light nourishment, such as a glass of milk. The severer and more temporary forms of excitement are best treated by the use of sulphonal, bromides, chloral, morphin, or hyoscyamin in small doses.

The general treatment of these cases is largely symptomatic. In the earlier stages, as soon as there is any suspicion of a sclerosis of the vessels in the central nervous system, the patients must be removed as far as possible from all responsibilities. They should be advised to give up everything which will subject them to unnecessary strain, either mental or physical. Life in the country is preferable to that in the city. The diet must be light and nourishing; plenty of exercise, not severe, in the open air is indicated. If the sense of fatigue is well marked, the patients may do well to undergo for a short time a rest-cure, during which time they are confined to bed, kept on a fluid diet, given massage, and allowed to have an occasional Turkish bath, best given under medical supervision. Stimulants of all kinds must be avoided. The bowels must be kept well regulated. In the poorer class of patients who come to the dispensaries and hospitals a great deal can be done by regulating the diet and by advising the patient to carefully avoid all excesses. The number of meals should be increased to five or six in the twenty-four hours instead of three. This, as a rule, obviates the possibility of a patient overtaxing his digestion at any one time.

Syphilis[1].—Since the middle of the last century the question as to whether syphilis gives rise to psychoses which can in any sense be characterized as distinctive of this disease has been much debated. Although no satisfactory solution has as yet been arrived at, much of the work of recent investigators has at least been beneficial in re-formulating the problems to be solved. As has already been said, it is now possible in a

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[1] Rumpf: Die syphilitischen Erkrankungen des Nervensystems, 1887. Kowalewsky: Arch. f. Psych. xxvi, 2. Nonne: Syphilis und Nervensystem. Berlin, 1902.

great number, if not in all, of the cases to differentiate the syphilitic from the paretic process, and the arteriosclerotic from the senile group; and at the same time we have arrived at more definite ideas about certain other conditions. In 1877 Erlenmeyer affirmed that the mental anomalies occurring during syphilis might be divided into the so-called simple psychoses and those in which disturbances of motility and sensibility are met with, the condition then bearing a striking resemblance in many of its phases to general paresis. Fournier speaks of a chronic depressed state in which there is a general intellectual impairment, and a second more acute type characterized by definite periods of excitement and delirium, which he holds are directly attributable to the action of irritating stimuli upon the cerebral cortex. Heubner[12] differentiates three distinct forms of aberration associated with cerebral syphilis: (1) In the first the pathological process is more or less localized, gummata being present in the convexity of the brain associated with conditions of depression or excitement with accompanying defect in memory, intelligence, and in the whole personality. In this form aphasia, various local paralyses, and epileptiform attacks are often encountered. (2) In the second, where the arteritis is confined to the basal portions of the brain, the symptoms are those of a simple dementia. (3) In the third form, where the vascular changes are more pronounced in the cortex, the most prominent manifestations are delirium, partial loss of consciousness, together with impulsive acts of various kinds. These investigations were carried still further by Kowalewsky.[13] The relation of the syphilitic infection to neurasthenic and hysterical states was studied by Charcot and his pupils. A convenient clinical division of the aberrations asso-

[12] Von Ziemssen's Handbuch, Bd. xi. 1.

[13] Syphilis and Neurasthenie. Centralbl. f. Nervenheilk., 1893. ii. Zur Lehre von der syphilitischen Spinalparalyse von Erb. Neurol. Centralbl., 1893. No. 12. Die functionellen Nervenkrankheiten und die Syphilis. Arch. f. Psych., Bd. xxvi. Geistesstörungen bei Syphilis. Allg. Ztschr. f. Psych., Bd. l, 1894. Syphilitische Epilepsie. Berl. klin. Wchnschr., 1894. No. 4.

ciated with syphilis corresponding with the three periods is as follows: (1) Those occurring after the arrest in development of the chancre. (2) Those encountered during the efflorescence, this period extending to the time when in cases which have not been promptly treated the arterial and meningeal lesions make their appearance. (3) Those belonging to the period during which the gummatous growths develop and the arterial disease becomes marked.

During the first period the mental symptoms are those belonging to an acute infectious disease. Among the milder disturbances noted are various manifestations of hysteria and neurasthenia. These may or may not be associated with marked mental depression, the individual being greatly perturbed on account of the character of the disease from which he is suffering, and being unable to divert his mind from the possible terrible effects of the malady which he is continually picturing to himself. These cases are frequently described as instances of syphilophobia. Occasionally in neurasthenic subjects these fears are so intense that a hypochondriacal state supervenes from which it is almost impossible to arouse the patient. In other instances, instead of depression, we meet with marked maniacal excitement. In all probability, however, in such cases the infection acts merely as a provocative agent in precipitating an attack of manic-depressive insanity, amentia, or some other psychosis.

States of depression or excitement are much more apt to occur during the period of efflorescence, and here a symptom-complex may develop which suggests the acute delirium associated with a rise of temperature followed by indications of more or less complete collapse, convulsive seizures, and symptoms of meningeal invasion.

In the third stage the onset of the mental symptoms is, as a rule, more gradual. In many instances there is apparently a general impairment of the mental and physical vigor. At first there may be some confusion, although in the early stages the patient retains a fairly accurate insight into his own condition. Some authors are inclined to distinguish between

simple luetic dementia and the so-called pseudoparesis of luetic origin. As these two groups of cases are apt to resemble each other in many ways, it is impossible to differentiate clearly between them. In some instances, however, we meet with individuals who show an insidious and progressive blunting of all their mental faculties with marked loss of insight and defect in memory, and who ultimately develop an apathetic dementia. During the course of the disease epileptiform or apoplectiform attacks may or may not occur. In other instances variations in the affective state are noted; the individual is sometimes depressed, at other times markedly exhilarated, so much so that it is frequently impossible to differentiate this mental condition from that which occurs in general paresis. In some instances ideas of persecution develop, the individual becoming markedly suspicious, not only of members of his own family, but of all with whom he is brought into contact. As a rule, however, these ideas are more or less transient and are seldom persistent or intense enough to supply more than a temporary motive for conduct. Such individuals, particularly in the early stages, are apt to show marked intolerance for alcohol as well as a loss of the power of concentrating the attention or energies. They neglect their work, no longer care for their families, and exhibit an indifference to all but the immediate necessities connected with their own existence. In the cases which simulate general paresis we may have impairment of the light reflexes, some difference in the facial innervation, marked tremor in the muscles of the face, tongue, and extremities, and a complex of symptoms which it is frequently impossible at the moment to differentiate from those of general paresis. These pseudoparesis of syphilitic origin may, however, be recognized by the slow progressiveness of the clinical features, the tendency to long remissions, and sometimes by the definite benefit derived from antisyphilitic treatment. In some cases a euphoria similar to that described under the expansive type of general paresis develops. In these dementing cases the course is, as a rule, protracted, death intervening only after a period of from ten to twenty years from the onset. As a rule, when the

dementia is marked, little can be expected from treatment, and permanent mental defects are nearly always noted, although the cases may be differentiated from those of genuine dementia paralytica by the apparent cessation of the disease process and the remissions extending over several years. The epileptiform attacks in these cases are apt to be much more frequent than in general paresis. The so-called juvenile paretics, as far as the present evidence indicates, should be classed as hereditary syphilitics, as they usually present more of the symptoms of cerebral syphilis than of general paresis.

Treatment.—In the group of cases described under the first and second heads an energetic antisyphilitic treatment often brings about recovery. Particularly desirable in these early cases is the use of inunctions. If any nervous symptoms develop it is better that the patient be isolated for a time, kept quietly in bed, given frequent baths or packs, and a diet restricted principally to milk. In the more acute cases, where maniacal symptoms appear, the individual should be transferred at once to a hospital where he can be carefully watched and the administration of mercury and iodides pursued rapidly to the point of tolerance. In the group of symptoms which develop later in the infection, the therapy is apt to be less satisfactory, although excellent results often follow the administration of large doses of the iodides. It is better to begin with small doses of a saturated solution and rapidly increase, adding one drop to the amount three times a day. In this way the patient can soon be made to take from 100 to 200 grains daily. After large doses have been given for four or six weeks the drug should be withdrawn and the patient allowed to go without any medication for a week or ten days, after which another period of treatment, lasting a month or six weeks, should be begun. In many of these mental abnormalities occurring in neurotic and debilitated individuals tonics—iron, arsenic, and strychnin—prove valuable adjuncts. The diet should be light but nourishing, and in the absence of too acute symptoms a life in the open air is all-important.

Pathology.—A great variety of pathological changes are

demonstrable in the central nervous system as a result of syphilitic infection. The characteristic lesions in the blood-vessels (see chapter on Dementia Paralytica) are nearly always present, but, as has been pointed out elsewhere, the marked infiltration does not, as a rule, affect the adventitial sheath. We meet with frequent evidence of the formation of new vessels, and, according to Nissl, the hypertrophy of the endothelial lining of the vessels is also a source for the new vessel formation, small capillaries penetrating the cells. In not a few syphilitic cases many of the localizing symptoms—for instance, various forms of paresis—are to be explained by the occurrence of areas of softening, whereas in the cases of paretic dementia they are more apt to be associated with changes in the minute structure of the cortex. The nerve-elements themselves are often swollen, and if a section of the cortex from a case of syphilitic disease is compared with one taken from the normal brain an apparent increase, not only in the size of the nerve-elements, but also in the formation of new vessels, can be detected. The size as well as the number of glia-elements is often greatly increased, and in certain places where the nerve-elements have been destroyed we have a thick matting of the glia-fibres (Nissl's *Gliarasen*). The diminution in the number of the nerve-fibres is not nearly as striking as in the cases of general paresis. For a full description of the various gummatous formations the reader is referred to the various text-books on general pathology.

CHAPTER XX

THE PARANOIA GROUP[1]

THE term *paranoia* was formerly used to designate cases of alienation in which the insane ideas were expressed in such a way as to suggest a certain degree of systematization or connection, being also developed with a semblance of logical sequence and marked by stability. Such cases were referred to as partial or systematized deliria, and were supposed to stand in sharp contrast to the so-called general deliria of mania or melancholia. Furthermore, it was thought that paranoia was more common in individuals who prior to the onset of the alienation had shown some predisposition towards nervous or mental disorders.

For a long time in the history of psychiatry paranoia was regarded as one of the stable symptom-complexes concerning whose origin and development it was impossible to gain any very clear conception, and alienists were apparently content with a merely casuistical study of cases and a series of catalogues of symptoms, so that each new phase in the social life seemed to be represented by a special type of paranoia. The text-books on psychiatry abounded in such titles as the persecutory, religious, hypochondriacal, sexual, or hysterical types of paranoia, and every slight variation in the clinical picture was accepted as sufficient justification for the immediate formation of a new group. Gradually, however, it became apparent, as has been shown in the chapter dealing with insane ideas, that the mere systematization and persistence of insane ideas could not be taken as specific characteristics of a disease entity. As soon as alienists began to study the development,

[1] Bente: Ueber das Primärsymptom der Paranoia. Halle, 1903. McDonald, W.: The Present Status of Paranoia. Am. Journ. Insan., 1904, January, vol. lx, No. 3. Schultze: Bemerkungen zur Paranoiafrage. Deutsch. med. Wchnschr., 1904, Januar 14–21, Nr. 3–4.

course, and termination of the various symptom-complexes, it was noted that clinical pictures remarkably similar in many respects could develop out of what were primarily essentially different conditions, and that neither the logical sequence nor the persistence of the ideas, with the retention of a fair degree of intellectual power, could be justly regarded as a dominant characteristic any more than the temperature curve could be considered the sole specific means of differentiating febrile disorders. As soon as the clinical method of investigation was given a fair trial it was found that it was possible to remove from this group a variety of paranoioid states which were found to be merely transitional phases belonging to other psychoses. Formerly it had been the custom to distinguish between the so-called acute and chronic cases of paranoia, the curability of the former being a matter of common observation. But the recognition of such a distinction soon led investigators to inquire whether the acute process with merely transitory paranoioid conditions might not be fundamentally different from the chronic states. It was noted, for example, that many of the more protracted cases of delirium tremens in which the insane ideas were arranged with some degree of logical sequence persisted for a considerable length of time unchanged, eventually clearing up and disappearing, and that finally the patient recovered completely. Gradually, as it became clear that the same mental state was observable in a variety of other conditions—for example, in the acute confusional insanity of the English writers and in the amentia of Meynert—alienists awakened to an appreciation of the fact that the grouping of these acute forms with the chronic systematized insanities was based merely upon the existence of certain superficial similarities. Thus, in connection with the study of a large group of cases which led to the present formulation of ideas in regard to dementia præcox, it became apparent that a great variety of chronic systematized forms of alienation characterized by a terminal dementing process with many specific symptoms in common, such as stereotypies, negativism, etc., bore only a superficial resemblance to paranoia. More recently the attention

of alienists has been directed to the occurrence of paranoioid forms of manic-depressive insanity, and here again it has been shown that in addition to the mental condition of the patient there are symptoms of a more purely physical character which serve to differentiate these cases from the so-called paranoia group. Whether the majority of the chronic cases develop out of an acute paranoiac condition is still questionable.

After all these deductions have been made we are still left with a small residual group of cases which can not as yet be definitely assigned to any of the psychoses hitherto described. And it is to this more or less indefinite assemblage of cases, representatives of which constantly fall under the observation of the physician, that attention will be briefly directed in the present chapter. Wernicke has defined the characteristics of this group of cases as consisting in a falsification of the content in conjunction with a normal activity of consciousness. As the acute forms of paranoia are variously classified under the different psychoses of which they form an integral part, it only remains to consider the so-called residual forms in which the active disease process has either run its course and become stationary or continues to develop only slowly and insidiously. Whether a clinical differentiation upon this basis can be maintained depends altogether upon the facts which the histories of cases, followed through long periods of time, bring to light. Reference has already been made in the earlier sections to the necessity of studying carefully the pathogenesis of the various forms of paranoia. Admitting that in the acme of the disease the main features of many of the cases consist in an essential absence of disturbances in the affective life and a predominance of more purely intellectual defects, too sweeping conclusions based upon a partial truth are still unjustifiable. For the earlier that we see many of the cases in which the intellectual defects are prominent, the more convincing is the evidence that among the first disturbances in the mental life the affective anomalies play an important part. For this reason the former attempts to bring the paranoioid states, as representing purely intellec-

tual defects, into such sharp contrast with mania and melancholia are not supported by our present knowledge. Berze refers the primary disturbance in paranoia neither to an intellectual nor to an emotional state, but to an anomaly in apperception of such a character that the process of bringing the psychic content into the field of consciousness is impaired. This anomaly of function results in the impairment of the apperception, and upon this derangement depends the lack of judgment and defective critical power of the paranoiic. Furthermore, this defect in function retards the departure of the idea from the field of consciousness when the representation has once gained access to it, and this anomaly in turn gives rise to a tendency to establish forced relationships between the various ideas in consciousness. These mental defects, of which the patient himself is in part subjectively appreciative, are in all probability the basis of the subsequent ideas of persecution. Hallucinations, when they occur, are neither primary nor essential factors in the development of paranoia. As a further result of his observations Berze concludes that the individual who is the subject of paranoia suffers from a psychic defect which can not be designated as an evidence of feeble-mindedness in the ordinary sense of the word, and that the primary disturbances are not in any sense affective. This point of view, although extremely suggestive, can not be considered as more than an interesting and possibly helpful hypothesis.

Specht[2] affirms that in studying cases of paranoia attention must be paid to several factors, such as the direction and form of the insane ideas as well as the material out of which they are developed. According to this same observer, the psychogenetic factor of greatest importance is the direction or trend given by the idea as determined by the individuality of the patient. Thus the ego becomes the centre of any false system of thought, and as yet clinicians have failed to emphasize sufficiently the importance of the egocentric character of

[2] Ueber den pathologischen Effekt in der chronischen Paranoia. Erlangen und Leipzig, 1901.

every insane idea. The importance of the affective disturbances and the fact that these ideas are born of emotional states in part explain their incorrigibility. The genesis of the ideas may be attributed not to the preponderance of one pronounced emotional state, but rather to a mixture of factors. Pure depression concentrates the patient's attention too minutely, while exaltation or exhilaration diffuses it. The systematized insane idea springs from a complex emotional state in which no one tone is alone dominant. The clinical proof for this is found in the paranoioid states which frequently develop in association with manic-depressive insanity.

With our present knowledge the ultimate solution of the whole question can not be derived from a study of comparative symptomatology, but must depend upon the perfection and elaboration of clinical histories to such an extent that the development, course, and termination of the doubtful cases, extending over long periods of years, can readily and minutely be investigated. The mere refinement of the psychological analysis, however admirable it may be, cannot give us any real insight into the natural history of the disease with which we are dealing; neither can the protracted duration of certain cases be looked upon as a safe criterion in differentiation. It is not at all improbable that whereas a disease process in one individual may run its course in a few months, in another person, under different surroundings and a stronger mental resistiveness, it may be prolonged for a period of years.

The remarkable confusion that results from the mere epochal study of paranoic states, without any genuine and steady attempt to trace the connection between apparently dissimilar conditions, is well exemplified in the study of the so-called original paranoia. According to Sander,[1] who first used the term, this form of chronic systematized insanity develops in individuals who early in life have shown certain abnormalities in character with a marked inclination to indulge in con-

[1] Sander, W.: Ueber eine specielle Form der primären Verrücktheit. Arch. f. Psych., Bd. i.

fabulation and dream-like revery. In the acme of the disease these individuals, on account of the character of their insane ideas, are classed among the most dangerous lunatics. Other observers think that the clinical course of the disease is one in which periods of vivid hallucinosis occur. The character of the fallacious sense perception determines the mood until eventually mental deterioration develops. The symptomatic features of these cases were considered by Neisser to be a varied combination of fallacious sense perceptions with an elaboration of the ideas, particularly those relating to the personality, and in the second place an excessive tendency towards the falsification of memory. A number of writers, particularly Meynert, were inclined to believe that such individuals had been the subjects of insane ideas for the greater part of their lives. Other clinicians have endeavored to find points of differential importance between this and other forms in the manner of the development of the malady.

The importance of periods of hallucinosis has been variously estimated, some writers holding that they are more or less constant, others that they are only occasional and episodic. Kraepelin, in the last edition of his book, dissents from the view that it is possible to trace the genesis of the insane idea back to an early period in youth, but thinks that the so-called original paranoics in whom the disease is said to have begun at an early period of life with a progressive development, broken by acute periods or exacerbations with marked hallucinosis, should be classified among the hebephrenics.

One of Schott's[4] patients has been under medical surveillance for twenty-five years. On account of the detailed history given the case is one of considerable importance in throwing light upon certain disputed points in the pathogenesis of this and similar conditions. Prior to the period at which this patient entered the asylum in 1879 marked eccentricities

[4] Schott, A.: Beitrag zur Lehre von der sogenannten originären Paranoia. Monatsschr. f. Psych. u. Neurol., 1904, Mai, Bd. xv, H. 5, S. 321.

of character had already been noted and a more or less indefinite history of the occurrence of insane ideas, even in earliest childhood, was given. The evidence upon this latter point, however, is believed by Schott to be too uncertain to justify its recognition. While the patient was under observation periods of definite hallucinosis occurred. In 1891 the patient began to show signs of megalomania, and the ideas which then presented themselves persisted with remarkable stability. Although the systematization and persistence of the insane ideas, together with a certain degree of intactness of memory and the power of intellectual effort, are still noted, the occurrence of disturbances in the motor functions during the attack would naturally suggest the idea that the case is one of hebephrenia and not true paranoia. Schott himself is of the opinion that the form of alienation is to be regarded as a chronic hallucinatory paranoia.

In the careful scrutiny and analysis of symptoms the clinician should avoid the error of assuming that the presence or absence of slight mental deterioration without other specific symptoms can be accepted as a means of differentiating between the typical cases of paranoia and other forms of alienation. As has been pointed out in Chapter III, it is more than probable that in every case in which an insane idea develops a certain amount of mental impairment exists. Frequently in the clinics individuals are met with who show a series of stable systematized insane ideas while still retaining considerable ability in reasoning, and in whom there can be noted but little interference in the volitional processes except when a certain line of conduct brings these into conflict with their delusions. The history of such individuals is that gradually, over a period of years, they become more or less nervous and irritable and nearly always show a tendency to be more and more self-centred. This latter phenomenon generally shows itself in a certain degree of distrust and inability to adapt themselves to their surroundings; they fail to get along with friends or relatives and begin to display a certain queerness and eccentricity of manner which is sooner or later recognized as ab-

normal even by the laity. Frequently the friends will tell us that these individuals have always been queer, have always shown marked eccentricities of character, have always been easily prejudiced and possessed by fixed ideas. Gradually the insane ideas become more and more crystallized, and, as a rule, first one or two make their appearance, and later others develop secondarily. In tracing the evolution of the symptoms it may be found that what could at first properly be described as irritability later becomes mistrust or suspiciousness. The conduct of those about them is misinterpreted; everything that is done, according to these patients, is directed against their welfare; poison is put into their food; they are followed on the street; if confined in an institution, they complain that they have been illegally committed and spend their days brooding over this fact. Frequently symptoms of definite hallucinations are present, and although the individual may not admit that such is the case, if carefully observed he will often be noticed apparently listening to the sound of voices, his lips moving as if attempts were being made to reply; in short, his conduct will in many ways justify the belief that he is influenced by fallacious sense perceptions.

Not infrequently, in addition to the auditory hallucinations, visual and particularly haptic forms seem to affect the conduct. As a rule, associative memory is to some extent impaired, but it often happens that memories immediately affecting the life of the individual are fairly well preserved, whereas those connected with his relationship to those about him are either defective or falsified. The emotional tone of such individuals is conditioned largely by the occurrence of hallucinations, being either one of suspicion or fear, or of aggressiveness, according to the nature of the fallacious sense perception. The higher faculties are more or less interfered with. These defects become more apparent when the symptoms of the patient are the immediate subject of discussion.

Litigious Insanity.—Another important class of cases to which the attention of alienists was especially directed by

the writings of Hitzig[3] is the so-called litigious insanity. As a rule, these individuals are characterized by the remarkable pertinacity with which they adhere to their ideas. They have a singular disregard for the rights of others with whom they are brought into contact and seem utterly unable to appreciate that a question may have two sides. All they seek for is to establish what they regard as their own rights without any deference for the feelings or rights of others. It is frequently very difficult, particularly for the laity or for physicians who have had no experience in psychiatry, to determine the existence of a marked mental defect in these individuals. They are generally regarded by members of the community as limited in their interests, excessively egotistical, and stubborn; but apart from these apparent eccentricities of character they are considered normal. The more one is brought into contact with them the narrower does their range of interest appear. Their conversation is limited to a perpetual harping upon affairs which are of immediate interest only to themselves, and in action as well as in word they show an utter lack of the power of dissociating themselves from the very small world in which they live. As a rule, they have an exaggerated sense of self-consciousness and egotism. Whatever goes on about them is immediately supposed by them to have some relation either to their conduct or to matters which pertain to themselves. Generally the mental disturbance first makes its appearance in connection with some real or fancied grievance, which they harbor in their minds and brood over continuously. They are unable to recognize that other persons may have rights, and their own individuality is the centre of the world in which they live. They are utterly uncompromising in their actions as well as in the expression of their own individual opinions, and brook no interference. An opposing opinion seems to stimulate them to greater obstinacy and make their

[3] Hitzig: Ueber den Querulantenwahnsinn, 1895. Pfister: Ueber Paranoia chronica querulatoria. Allgem. Zeitschr. f. Psych., lix, p. 589. See also Lane, E. B.: Litigious Insanity with Report of a Case. Am. Journ. Insan., vol. lix, No. 2, 1902.

argumentative aggressiveness even more noticeable and more unpleasant. Any attempt to hold them back merely drives them to even greater lengths in attempting to establish their fancied rights. Their time is often spent in writing lengthy appeals to friends or officials and in setting forth their side of the case with the greatest minuteness of detail, and without admitting in any way that the person with whom they have been brought into controversy can possibly have any rights in the matter. Persons affected by forms of litigious insanity are great nuisances to the community. A failure to convince one set of officials of the merits of their case only serves to increase their pertinacity; they become even more set in their determination to establish their claims, and immediately go to others in authority, reiterating their grievances and clamoring for justice. As the mental symptoms in these cases usually become pronounced during the prime of life and develop insidiously, a great deal of annoyance is often suffered by members of their family and friends before the fact is recognized that these individuals are really insane. Not infrequently they are conspicuous litigants in the courts, and, as the mental deterioration is not a prominent symptom, their supposed grievances often excite the sympathy and compassion of those who are unacquainted with all the facts.

Gradually, as the disorder progresses, the argumentativeness and aggressiveness become so intense as to estrange the individual from members of his own family. Even at this stage the intellectual capacity, although limited in certain directions, may be retained to such a degree that there may be little or no evidence of deterioration that can be appreciated by those who are not experts. Frequently the litigious paranoiic, if he has failed to accomplish his ends by fair methods and by legal procedures, will adopt foul means, contriving all sorts of plots, often most ingeniously constructed, and sometimes in this way securing the aid of innocent persons in the perpetration of some crime. Cases are on record in which individuals who were under the delusion that they had suffered the loss of funds through the action of friends either

themselves perpetrated thefts, or incited others to do so in order to acquire the money which, as they claimed, had been lost or had been taken from them by legal procedures. These patients will not stop short of any means to accomplish their ends, and even deliberate murders not so very rarely have to be looked upon as having been committed by individuals suffering from this form of insanity.

CHAPTER XXI

THE SENILE GROUP. PSYCHOSES CONNECTED WITH THE PERIOD OF SENILE INVOLUTION

In the following chapter we propose to give an account of the mental disturbances which come on first during the period of senile involution and are not recurrent attacks of alienation that have appeared prior to this epoch of life. In order to facilitate the discussion of these disorders, it may be well to refer to the mental, physical, and histological changes which are characteristic of the period of senescence. The mental changes occurring in normal old age are in a measure specific. It may be said in a general way that there is marked interference with the synthetic processes; in other words, although the critical faculties are well retained, the productivity or mental output, as compared with that of the preceding period in life, is limited. Of course, the inference is not to be drawn that this happens in all cases, for history contains brilliant examples of remarkable retention of intellectual capacity, even into the eighth and ninth decades (Virchow, Gladstone). But, generally speaking, the acquisition of new facts and intellectual expansion in the normal individual do not continue after the fiftieth year. Not only does this enfeeblement in the associative mechanism become gradually more and more marked, but there is also a narrowing in the emotional life. In advancing years the individual becomes more and more centred in his own affairs and in his own immediate environment, so that only with considerable difficulty are his interests extended beyond the range of persons, objects, and things with which he has long been familiar. Associative memory, as a rule, is one of the first functions to suffer. Recent impressions fade, and the individual shows a tendency to revert more and more to the times of his early manhood and youth. For this reason, as a rule, there is an apparent indifference and lack

of interest in the affairs of the present, and the "good old times" are referred to with constantly increasing frequency. As may be inferred, the habits and customs of the life of an individual play an important part in bringing out at this period eccentricities of character.

The bodily manifestations in the period of senescence are very varied and prominent. Among these, as a rule, are the changes in the facial expression, the increase in the number of wrinkles and deepening of those that already exist, together with a general wasting of the musculature, the disappearance of subcutaneous fat, and considerable impairment in the motor activities. The senile tremor is commonly noted. The hair, as a rule, is white and sparse, the arcus senilis is marked, and other senile changes in the eye become apparent. In some instances the pupils are uneven, but the reactions for light are not, as a rule, greatly impaired except in the cases which suggest dementia paralytica. Various neurotic disturbances, the result of arterial changes, are also noted, while imperfect functioning of the heart, liver, and other organs is common.

The changes that occur in the central nervous system in senility have been the subject of considerable investigation. Redlich[1] regards all the changes found in the brains of individuals who have died at an advanced age as marks of senility. Nevertheless, it would seem far better to use the term not as meaning a normal aging, but in a pathological sense, and to class under this category only those alterations which do not occur in the majority of old people.

Chief among the changes in the brain is the marked decrease in its weight, as shown by the following statistics of Parchappe:

	30–39 yrs.	60–69 yrs.
Men	1423 grms.	1334 grms.
Women	1246	1175

[1] Redlich, E.: Beitrag zur Kenntnis der pathologischen Anatomie der Paralysis agitans und deren Beziehungen zu gewissen Nervenkrankheiten des Greisenalters. Arbeiten aus d. Inst. f. Anat. u. Physiol. d. Nervensystem. H. Obersteiner, Wien, 1894.

In nearly all cases of advanced senility there is also considerable atrophy of the convolutions, with a deepening and broadening of the fissures. In the interior of the brain we meet with a dilatation of the ventricles and canals and a mild grade of senile hydrocephalus. In the cortex we not infrequently meet with the *état criblé* and in the central ganglia the *foyers lacunaires de désintégration* described by Marie. Accompanying these gross lesions are changes in the nerve-cell, a granular degeneration of the Nissl bodies, with a chromatolysis. In many of the cells there is a marked increase in the pigmentation, interpreted by some authors as pigment degeneration of the cells.

In the vascular system we meet with dilatation of the vessels, particularly of the intra- and extra-adventitial spaces (spaces of Virchow-Robin and His), with considerable pigmentation in the adventitial coat. The neuroglia is usually increased in quantity, both the cells and the fibres, but particularly the latter, participating in the process. Colloid degeneration of the vessels has been noted by Alzheimer, and its occurrence is said not to be always indicative of a pathological lesion. Associated with the over-development of the neuroglia tissue there is an increase in the number of amyloid bodies, the origin of which, according to Obersteiner, is probably in round yellow bodies found in the glia-cells.

In a certain number of individuals the physical changes incident to old age are associated with marked symptoms of mental aberration during life, the clinical picture as well as the post-mortem alterations supplying evidence of pathological lesions in the central nervous system. The senile psychoses may, from a pathological stand-point, be divided into three classes: (1) Cases of simple senile mental disturbances, during which no evidence of marked organic lesions are to be found. In patients dying of some intercurrent malady and coming to autopsy the only pathological change which bears any relation to the alienation is a very slight accentuation of the senescent changes already described. (2) Cases in which the symptoms point to the existence of definite organic lesions in the central nervous system and which in many instances, in

the clinical picture as well as in the post-mortem findings, simulate cases of general paresis. (3) The senile dementias.

Besides the fact that this grouping is very convenient, it offers the possibility of a classification upon a clinical as well as a pathological basis.[2] But, nevertheless, it must always be borne in mind that the cases can not always be sharply differentiated, and the groups may merge into each other. In order not to repeat what has already been said in Chapter XV upon the subject of the clinical and pathological differentiation between the atypical cases of dementia paralytica and certain forms of the senile psychoses, only two clinical groups, corresponding to (1) and (3), will be discussed in the present chapter.

(1) The first group includes states of (*a*) mental depression, (*b*) excitement. Under the former are included the cases which are characterized by mental depression, generally associated with some anxiety and apprehensiveness, but which do not form a part of other psychoses.[3] These cases are among the most common of all the forms of alienation which develop at this period of life. The duration of the disease varies from several weeks to one or two years, and in a large percentage of the cases there is an ultimate recovery. The onset, as a rule, is insidious and slowly progressive. In the majority of cases there is at first a slight accentuation of the senile mental changes to which reference has already been made; but after some one of various exciting causes has intervened, the patient shows a tendency to become more and more egocentric. The outside world contains less of interest for him and he becomes absorbed entirely in his own immediate environment. The initial symptoms as well as the later stages of the disease have a strong individualistic stamp. Personal idiosyncrasies are accentuated, and the patient becomes hypochondriacal, more or less indifferent, or introspective, in accordance with the

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[2] Cramer, A.: Die senile Seelenstörung. Patholog. Anatomie des Nervensystems, 1904, Bd. ii, S. 1504.

[3] Kraepelin: Psychiatrie, Siebente Auflage.

PLATE XX



traits of character exhibited during his former life. Not only do the personal qualities become exaggerated in the early stages of the disease, but the daily life of the individual, to which he has become accustomed for years, becomes reflected in this stage. Thus, the business man first loses pleasure and interest in his daily occupation and begins to worry about trifles. He is easily confused, complains that every mental effort causes him too great an output of energy, every new undertaking immediately gives rise to apprehensiveness, and the fear of failure may be so great as to cause marked emotional disturbances. Early in the disease, as a rule, the subjective feeling of insufficiency develops; in fact, this is one of the most characteristic symptoms of the disease and plays an important part in its further development. This sensation varies in intensity from one of mere dejection to a feeling of anguish, and when unassociated with the fixed ideas is in a measure proportional to the intrapsychic akinesis. As the disease progresses the akinetic disturbances become more and more marked, until finally they are evident in the impairment of connected thought as well as in the diminution in extent and energy of all volitional movements. The mental inertness is shown in a great variety of ways, and may in part be attributed to the alteration in those psychic sensations which are so immediately dependent upon the general organic sensations.* That series of complex affective states which we refer to commonly as pleasure, love, hate, and so forth, is in the ultimate analysis dependent upon the preservation of the normal organic sensations, and when there is any interference with these, there is a corresponding change in the emotional reactions. For this reason the progressive feeling of insufficiency and depression is accompanied by a corresponding decrease in the number of emotional reactions, a deficiency that becomes more apparent the more highly organized and sensitive the character of the patient prior to the attack.

Although there is a diminution in some of the organic sen-

*Wernicke. Op. cit., 345.

sations, others become intensely exaggerated, and these undoubtedly form the basis upon which many of the hypochondriacal states develop. In many cases the patient becomes more or less rapidly self-centred, evincing little or no interest even in the immediate members of the family, so occupied is he by his own symptoms and the course of the disease. In the *hypochondriacal form* the individual frequently affirms that the disease with which he is afflicted is incurable and that medical aid can be of no avail. The deepening mental gloom is broken only by renewed expressions of hopelessness and dismal laments regarding his poor physical condition. In some instances the patient's attention is mainly centred in his thoracic or abdominal organs, and he not uncommonly affirms that his viscera have been transposed, injured, or even removed. A good example of these delusions is afforded by the following case:

Male, aged 63, married. Admitted to the Sheppard and Enoch Pratt Hospital June 27, 1901.

Family History.—One sister insane.

Personal History.—The patient has had no illness since childhood except occasional attacks of indigestion. Has never used tobacco nor alcohol. Has been married 35 years; his wife and several children are living. While he has always done hard mental work he has had no nervous breakdown.

Present Illness.—In the summer of 1900 the patient became greatly worried about his work, and by October had become extremely nervous. He was troubled with insomnia and was in a state of continued depression, which increased to absolute hopelessness about himself. He had fixed ideas relating exclusively to his own person. He thought that his food was not being properly assimilated, and, although his appetite was good, he constantly affirmed that he had no desire to eat. In December he expressed the fear that he was losing his mind and would not be able to attend to his daily occupation. In January, 1901, the patient weighed 75 pounds, a loss of 30 pounds from his normal. He complained of a throbbing sensation in his brain and of increasing worry concerning his digestive troubles. He soon felt obliged to give up his work and went to an institution for treatment. The insomnia and mental depression increased. He had the fixed idea that his digestive organs were drying up, that his body was disintegrating, and that to take food would be fatal. These symptoms continued pretty much the same until June, when he expressed his intention of starving himself to death and thus ending his suffering.

Present Condition.—On admission the following note was made: The

patient remains in bed, makes no effort to assist himself, and relies entirely upon the nurse. The facial expression is fixed and indicates a depressed mood. There are horizontal furrows on the forehead and two slight perpendicular grooves between the eyes. He shows no marked aversion to talk and answers questions, but is markedly egocentric and convinced of the truth of the ideas regarding his physical and mental condition. He affirms that his present condition is due to overwork and insomnia and that the latter has led to insanity. He says that prior to the onset of the disease his organs functioned normally, but now their action has become vitiated and everything about his physical economy has gone wrong. He is not self-accusatory, but is constantly brooding over his condition, manifesting many and varied hypochondriacal symptoms. He says that he has no appetite and does not wish to eat, that everything tastes alike, and that when his eyes are closed he can not tell one article of food from another. He declares that every mouthful he takes, instead of digesting, remains inside of him and ferments, and that his bowels are never moved naturally. Speech is slow and somewhat hesitating; the tone of the voice is low, with falling cadences. There are no aphasic symptoms. He declares that his hearing is failing; that he is unable to recognize familiar sounds. He has shown no delusions regarding his personality and has not mistaken the identity of other persons.

Physically he is anæmic and emaciated. Tongue clean and moist.

Audition: Hears watch at a distance of five or six inches from the right and one or two inches from the left ear.

The eyes show nothing abnormal.

The tendon reflexes are all diminished. Epigastric active, cremasteric fair.

Heart sounds extremely weak. No apex beat localized on inspection or palpation.

Blood: Hæmoglobin, 65 per cent. Red blood-cells, 4,900,000; leucocytes, 8,000.

Several months later it is noted that the patient's mood has not changed and he is still depressed and introspective. He has had some slight trouble with his nose and thinks that the mucous membrane is gone. He says his nose is closing up, that his nasal passages will soon be entirely closed, and that he will be unable to breathe through them. December, 1901. The somatic delusions persist. Suspects that he is losing his speech. Maintains that his food does not digest, but merely piles up inside of him. Has been under the impression that the respiratory passages are becoming occluded. He does not cleanse his nostrils properly and will not allow his face to be touched while being bathed, fearing that water will get into his nose and thus suffocate him.

November, 1902. Still insistent upon the "disorganization of the body, principally the intestinal tract." Does not initiate conversation; remains seated quietly; does not pay any attention to conversation between others; watches the movements of patients and nurses, but does not enter into conversation. Occasionally walks over to the window and looks out at the view. The improvement during 1902 has been very slow. Patient admits

that he sleeps better than formerly, although he still maintains some of his ideas about his digestive tract.

As in this case, the patients seem to show considerable appreciation of the fact that they are the subjects of mental aberration. They express the fear that they are losing their minds, and in proof of the truth of their declarations refer to the mental confusion, vertigo, and other abnormal sensations with which they are affected.

In addition to the hypochondriacal feelings, many patients show a marked tendency to brood over sins of omission as well as of commission of which they affirm they have been guilty. Utterly disconsolate, they dwell upon acts committed in their youth, and mere peccadilloes are now looked upon as heinous offences. They remember on a certain occasion having told a lie and affirm that the memory of this sin has persisted all their lives, and now Providence has burned its imprint upon the brain and sent the disease as a just retribution. Frequently the observer is struck by the fact that the causes assigned by the patients as reasons for their despondency are wholly insufficient and out of all proportion to the excessive affective disorder. In addition to the ideas of culpability and criminality, we frequently meet with those of persecution, which are very apt to be colored by the emotional tone of the patient. Or, again, a patient may affirm that life has been too happy, that he has been too selfish, and has lived in the present, taking no thought for the morrow; that as the result of this frame of mind he has given little attention to matters of religion, and consequently God wishes to direct his thoughts to less worldly affairs, and so torments the body in order that his mind may be set on higher things. Not infrequently the ideas are associated with a human agency and, if this is the case, the illness is regarded as the result of poison which has been put into his food. At other times the ideas of being persecuted and of having sinned are combined. Patients express a fear that they are to be brought before a court of justice to be tried for crimes, and in spite of their innocence are to be convicted.

They are firm in their declaration that no reason exists why this calamity should overwhelm them and they be cast upon such a sea of trouble. Life has become a hell upon earth, owing to the supposed faithlessness of family and friends, and they alone and unaided must wander through a slough of despond. Not infrequently such individuals complain of great annoyance from being, as they suppose, under continual observation. Nothing that they do can remain hidden; their acts and even their thoughts are known to those about them; they long for some degree of privacy and dread the publicity to which they think they are exposed.

In many cases extreme poverty is complained of. Even well-to-do individuals affirm that they have lost every cent; that, as a result, they have been sent to what was represented to them as a hospital but is in reality a poor-house; that not only they but their family and friends are in absolute need; that nobody knows of this fact but themselves, and that nothing remains for them but to die before the disgrace becomes public, and they long for death in the hope that the misery of seeing relatives and friends in great want may be spared to them. Sometimes patients in this state affirm that they have accumulated enormous debts which can not be paid, and this delinquency may be referred to their deficient business capacity or to the improper use they have made of funds entrusted to their care.

In some instances the ideas are nihilistic in quality. The whole world is changed. The air that the patients breathe is becoming less; the food supply is at an end; there is no possible help, not only for themselves, but for those about them. All are dying or are actually dead, and they alone survive. Not only is the world about to be destroyed, but the whole universe is rapidly disappearing; nothing remains but chaos. The following extract from the letter of a patient illustrates these nihilistic ideas as well as the dissociation of thought:

"Were the whole world mine or the wealth of it, I would give it for one moment of life. Dr. X said, 'You can live if you want.' Dr. Y said

put her at ——, but time, place, position, nor people can have effect on this that was not allowed what the smallest insect has or the vilest beast. No heart with the pulsations of life, no brain with a sensation of feeling, no body to ache or decay, but when an infant robbed of all that belongs to mortals."

In a comparatively few cases we find that the individual has the idea that he is possessed by evil spirits or that he is transformed. On account of the awfulness of his supposed crimes he has been turned into an animal, a dog or a cat, and as a consequence of early delinquencies is destined to an unbroken metempsychosis.

In regard to the genesis of the insane ideas a great variety of opinions have been advanced by different authors. Heller[5] maintains that in the uncomplicated cases they are an attempt on the part of the patient to interpret the abnormal feelings that depend upon the disturbances in the complex of organic sensations. As a result of these anomalies the patient develops strange ideas, not only in regard to his own personality, physically as well as mentally, but also to his relationship with the external world. From the former spring the ideas of self-depreciation, accusation, and hypochondriasis, while from the latter arise those ideas of reference that culminate in a well-developed belief of persecution, etc. The same author believes that the development of the insane ideas out of obsessions, fallacious sense perceptions, and "audible thoughts" indicates the existence of a complicating psychosis. According to Ziehen, the hallucinations are met with in about one-tenth of all the cases, and auditory forms, when they occur, generally consist of elementary sounds localized in the head, chest, or abdomen, or may resemble psychic hallucinations. Systematization of the insane ideas is not at all infrequent, and is particularly noticeable at the height of the disease. Schott[6] has affirmed that its presence does not by any means justify the

[5] Heller: Die Wahnideen der Melancholiker. Inaug. Diss., Marburg, 1898.

[6] Schott: Beitrag zur Lehre von der Melancholie, Arch. f. Psych. u. Nervenkrankh., Bd. xxxvi, H. 3.

statement that the prognosis is unfavorable. In the cases where the mental depression is the dominating feature the facial expression is essentially characteristic. As a rule, the skin over the forehead is wrinkled, owing to contraction of the frontalis muscle. The wrinkles are horizontal, except just between the two eyes, where frequently there are several short perpendicular furrows. When the anxiety and apprehensiveness are not great, the corners of the mouth are usually depressed, the lips tightly closed, the eyes often have a glassy and vacant look. The attention of these patients varies somewhat with the degree of depression. In the milder cases it is easily gained, but retained with difficulty, as the patient constantly tends to revert to himself and his complaints. Associative memory is not apt to be greatly impaired except in so far as it is affected by the depression and insane ideas, to which reference has already been made. Frequently the patients are well oriented for time and place, and, except in the very severe forms, there is no marked disturbance in consciousness. In a comparatively large number of the cases the emotional disturbances play a very important part, and chief among these is the state characterized by great anxiety and apprehensiveness—the *Angst* of the Germans.

Although it is not improbable that cases of mental depression with marked apprehensiveness and anxiety may develop relatively early, it cannot be denied that the majority are first noted after the prime of life has passed. The apprehensiveness may at first be definitely localized in the chest or abdominal cavity or even more sharply limited to the precordial region. The dependence of this symptom upon cardiac lesions has already been referred to in the chapter on Anomalies of Emotion. Unquestionably, in many cases the mental symptoms already referred to are complicated by the appearance of periods of great anxiety and apprehensiveness. The primary sensation, as has been stated, may at first be localized, but rapidly becomes more general, and not only intensifies the depression and furnishes a new basis for the further development of the insane ideas, but is also reflexly affected by

the presence of other symptoms. When the apprehensiveness is marked, the motor restlessness, as a rule, becomes very great. Such patients pull at their clothes, scratch themselves, bite their fingers, wander aimlessly about the wards, complain of a great variety of indefinite fears, and act as if they were under the shadow of some impending evil, concerning the nature of which they have only a faint inkling. Frequently they barely have time to give expression to one fear before this idea seems to be forgotten and a new one takes its place in consciousness. In some cases the apprehensiveness is associated with hypochondriacal ideas, while in others those of self-abasement, of persecution, and the other forms already mentioned frequently make their appearance and exert a dominating influence on the patient. The history of the following case shows clearly the genesis of some of the symptoms and is in many respects characteristic:

Male, aged 32. Farmer.

Family History.—Father died of "cardiac dropsy." Mother died at 68 of heart trouble. No nervous or mental disease.

Personal History.—Ordinary diseases of childhood. Sunstroke at the age of 32. Very severe attack. Unconscious for two and a half hours. Convalescence slow. Typhoid fever three years ago. Very delirious during the attack. Influenza last winter followed by heart trouble. The patient has always been rather excitable and slightly impulsive. Otherwise no anomalies of character. Steady worker. No history of alcohol or narcotics. No venereal disease.

Present Illness.—Following the attack of grippe last winter the patient began to brood a good deal over his ailments. For two or three months he had periods of mental depression, occurring about once a week, which gradually increased in frequency until they recurred every day. For a month prior to admission to the hospital he had shown symptoms of motor restlessness and would tear his clothes and hair, pray in a loud tone of voice, sing, etc. The excitement was most marked during the afternoon and night. The patient declared that he was ruptured, had spinal trouble, that people were cutting holes in the back of his neck, that he had dropsy and other bodily ills. At times he affirmed that he himself was to blame for these injuries and would repeat for hours at a time, "Why did I do that?" Since the attack began he has been unable to write. The day he was admitted to the hospital he tried to sign a cheque for his wife but could not do it. Although greatly excited during the last month he has shown considerable appreciation of his mental condition and referred frequently to the fact that he was going to the hospital. Just prior to admis-

sion to the hospital he shot at his wife and then attempted to commit suicide.

Physical Examination.—October 31. Patient lying in bed on his back. On the approach of the examiner he glares at him in a wild way, but almost immediately turns his eyes away. Well nourished, muscular development good. No excess of fat. At times shows no tendency to change posture of body in bed, retaining uncomfortable position for several minutes. Occasionally he moves the bedclothes and looks under them as if he were seeking for something, and then begins to pick at the skin over the abdomen as if there were some paraesthesia. At intervals of two or three minutes he starts up as if he were actuated by sudden impulses. His expression at this time is one of anxiety and apprehensiveness, and he almost immediately lapses into his former slightly apathetic state. Noises made by tapping on the bed or the tick of a watch held close to his ear seem to make little if any impression upon him. Occasionally he looks in the direction of the person addressing him. The majority of his volitional reactions do not seem to be the result of external stimulation, with the possible exception that he occasionally promptly shows some resentment on being touched, but the repetition of this stimulation fails to induce similar results. The sound of voices makes little if any impression. He does not attempt to answer questions. At one time he smacked his lips as if he wanted to drink, but when water was brought to him he made no attempt to help himself. Occasionally he seems to be bothered by flies and makes an attempt to catch them. When the mouth is forcibly opened by a spoon or a tongue-depressor no gagging follows, but as soon as the spoon is withdrawn the patient rapidly protrudes and retracts the tongue. These movements are kept up for several seconds. The eyes show nothing abnormal beyond injection of the corneal vessels and a very slight irregularity of the left pupil.

Heart: Cardiac dulness begins at the third interspace, extends beyond the nipple to P. M. I., which is located with the stethoscope in the fifth interspace outside the nipple. The heart's action shows marked irregularity, noticeable at the apex as well as in the radial pulse. Five or six beats in rapid succession are followed by two or three slow ones separated by long intervals. There is a systolic murmur at the apex. The second sound is snapping in character. In the pulmonic area the first sound is murmurish. The second sound is stronger. Lungs normal on auscultation and percussion.

Reflexes: Knee-jerks exaggerated. Cremasteric reflexes present. Neither McCarthy's reflexes nor the abdominal skin reflexes obtained. Dermatographia is slow in appearing. No rigidity on passive movement. No paralyses.

Four days after admission a slight improvement was noted. The patient apprehended and answered some questions. At night he was very much disturbed. He spent a good deal of his time praying that he might die and go to Heaven. For the next ten days the patient was in a state characterized by great apprehensiveness and anxiety. He moaned and groaned a great deal of the time, and would run up and down the ward,

wringing his hands and crying "My God!" at the top of his voice. When spoken to sharply he would reply intelligently, giving his age, name, and so on, but almost immediately would begin to ramble again. Blood-pressure, 190 millimeters. One month after admission there was marked self-accusation. No psychomotor retardation, but a constant expression of hypochondriacal ideas. He began to show some slight anxiety about his family and to take notice of the objects and things about him. Towards the end of the second month there was considerable improvement. He appreciated his condition—that he had been ill and that he was recovering—although the hypochondriacal ideas were still marked.

The urine showed nothing abnormal. Indican, sulphates, phosphates, and chlorides were practically normal. No albumin, no sugar.

In this and in similar cases the consciousness is much more markedly affected than in the pure types of affective melancholia, and not infrequently associative memory is also considerably disturbed. This may, in a measure, be dependent upon the fluctuations of the attention, which seem to become more noticeable the greater the anxiety and apprehensiveness. In both classes of cases, as may be inferred, there is great danger of the patient committing suicide, and where the emotional disturbances are marked the attempt may be made to inflict injury upon others. These patients should be under constant observation and never left alone. As a rule, from the beginning until the end of the disease insomnia is common, and even when sleep is obtained it is apt to be restless and broken by unpleasant and terrifying dreams. The appetite is poor, and forced feeding must frequently be resorted to.

Gastro-intestinal disturbances and obstinate constipation are common. The surface temperature is not infrequently lowered, the extremities being cool and sometimes slightly cyanotic. The pulse, as may be inferred, is frequently abnormal and gives evidence of the presence of arterial changes. The pressure is, as a rule, high. Cardiac lesions are common. The skin is usually dry and shows evidence of nutritional changes.

In addition to the physical symptoms already noted, in at least one-half of the cases there is a marked increase in the deep reflexes. In a comparatively few cases a diminution is noted which often is associated with the appearance of sugar

in the urine. The vasomotor disturbances are frequently marked. Dermatographia, as a rule, is easily obtained and persists for a considerable length of time. Schott has estimated that in at least 12 per cent. of the cases there is a marked increase in the mechanical irritability of the muscles, particularly at the period when there is considerable impairment in the nutrition. The disturbances in sensation are largely psychic in origin. The bodily weight falls and remains low. As a rule, the rise in the curve is the first indication of improvement.

Course and Prognosis.—The disease pursues a chronic course, varying from a few weeks to two or more years. In the milder cases the ups and downs are more marked than in the severer forms, in which the mental state of the patient frequently remains stationary for long periods of time. As the bodily weight increases and the general physical condition improves, the mental symptoms gradually begin to disappear. The systematization becomes less marked. The patients express doubt as to the truth of the fixed ideas and are willing to admit that their mental depression as well as their feeling of insufficiency and the fixed ideas are the result of physical ailments. Sometimes a period characterized by irritability and varying degrees of motor restlessness intervenes, and associated with this there are marked fluctuations in the emotional life. Naturally the longer the duration the more unfavorable is the prognosis, but cases of complete recovery have been reported after the disease had lasted for four or five years. As a rule, the tendency for the insane ideas to become systematized is more marked in the cases which begin at a very advanced period of life than in the earlier ones.

The *prognosis* in a large number of cases is favorable. Kraepelin reports that 32 per cent. of his patients recovered, while in 23 per cent. a marked improvement took place. According to Schott,[1] there was a complete recovery in 35.2 per cent. of the cases which occurred in the fifth decade, and

[1] Op. cit.

in 22.2 per cent. of those which came on during the sixth decade. The prognosis becomes more unfavorable when there is evidence of marked mental reduction; for example, in cases where the signs of mental depression and apprehensiveness or anxiety give place to apathy and indifference. As has already been said, the earlier the systematization of the insane ideas the longer will be the duration of the case. In cases where the physical state becomes rapidly worse, the refusal of food marked, and the changes in circulation assume an ominous character, death may follow from pure exhaustion. The occurrence of various disorders, such as Bright's disease, an endocarditis, or pneumonia, increases the gravity of the prognosis. The disease is much more frequent in women than in men, the proportion being as two to one. It is much more common in the married than in the unmarried, and in at least one-half of the cases there seems to be a predisposition to alienation, shown either by the occurrence of mental disease in the parents or in the brothers and sisters, or by the tendency shown by the patient earlier in life to become the subject of "nervous breakdowns," etc. The tendency to recurrence is marked, being present in at least 15 or 20 per cent. of the cases. When complete recovery does not ensue the disease either progresses until the symptoms of senile dementia become well marked or the patient recovers sufficiently to be discharged from the institution, although a considerable degree of mental enfeeblement remains.

The *differential diagnosis* is often difficult. Cases occurring towards the end of the fourth or the beginning of the fifth decade may very easily be mistaken for instances of manic-depressive insanity, in which the psychomotor retardation is not well marked and the insane ideas are not well developed. The diagnosis can often be established after careful observation of the development of the disease. The marked emotional indifference characteristic of patients suffering from dementia præcox, as a rule, serves to differentiate this disorder from the involutional melancholias, as well as the disturbances in associative thinking and the presence of obsessions and impulsive

acts. The depressed form of general paresis is, as a rule, characterized by a considerable defect in associative memory and a marked general mental impairment, as well as by the occurrence of physical symptoms.

Treatment.—When the disease is well developed, unquestionably the patient is better off in bed and under the constant supervision of a well-trained nurse and not merely of an attendant. He should be carefully isolated from all disturbing influences, even the members of the family not having access to him. At the beginning of the treatment it is always better to restrict the diet to fluids—milk given regularly at intervals of from two to three hours or raw eggs beaten up, either alone or in milk; later, soups, toast, raw or stewed oysters may be added. If there is any motor restlessness or any marked degree of apprehensiveness or anxiety present, it may be necessary to administer sedatives; trional, sulphonal, the bromides may be given in small quantities, but not, however, until the effect of the bath given in a tub at the bedside or, if the patient does not stand this well, of warm packs, has been tried. As the case progresses gentle massage may be given, either once or twice a day. The manner in which the patient reacts to this procedure should be carefully noted, as in some instances it excites him so that sleep is interfered with. The effect of the hydrotherapeutic measures is, as a rule, satisfactory. If the bathing and massage are well borne, the patient may be given cold sprays, but as this procedure is apt to be very stimulating it is best employed only in the morning hours. The mental effect of a good nurse cannot be overestimated, and her intelligence should be of such a character as to be capable of arousing and stimulating the patient's attention. The careful selection and reading out loud of good literature by the nurse, especially such as serves to amuse, is useful during the period of convalescence.

The period of convalescence is apt to be somewhat protracted and the patient needs to be carefully guarded against the danger of relapse. Not infrequently a change of air, a long voyage, or a quiet life in the country, if possible under medical

supervision and the care of a trained nurse, is indicated. No form of treatment can properly be condemned as severely as that frequently advised by many practitioners, who send their patients during the onset or height of the disease on long journeys or prescribe forced occupation as the best means of insuring recovery. This form of treatment, if it does not end fatally, owing to suicide of the patient or some intercurrent complication, is sure to add greatly to the duration of the disease, even although the proper therapeutic measures may be finally instituted.

In addition to the symptoms of agitated melancholia characterized by motor restlessness, great anxiety, and apprehensiveness, there is a group of other symptoms deserving special mention which occasionally occur in senile cases. The majority of these, however, probably represent either the early stages of alienation developing on an arteriosclerotic basis or the prodromal symptoms of senile dementia. This is particularly true in regard to the cases in which the hallucinations become marked and the mania resembles that of the excited stage of dementia paralytica. There is the same expansiveness, mental exaltation, tendency to engage in new occupations, to form new plans, to act without counting the cost. Wernicke has described a group of cases which he thinks occur quite frequently at this period and bear a marked resemblance to Korsakow's symptom-complex. This group of cases was described by the older writers as presbyophrenia (Arndt). The power of the patient to comprehend the questions addressed to him, the fact that it is possible to attract the attention, and the evident response to external stimulation, as well as the ultimate recovery, are supposed by some to differentiate them from those terminating in senile dementia. In general, these cases bear a marked resemblance to those of mental depression with anxiety and apprehensiveness which have been described. There is marked allopsychic disorientation with a great tendency to confabulate, and, as a rule, the retroactive amnesia is present. The emotional changes may be characterized as either an euphoria or as a condition in which

the patient is exceedingly irritable and given to outbursts of anger. The disturbances in the power of apprehension, according to Wernicke, do not depend entirely upon the allopsychic disorientation. These cases are apt to run an acute course, lasting from four to eight weeks, although in some instances they are more chronic. In a large number the prognosis for recovery is favorable, but some end in senile dementia.

In addition to the cases already mentioned, Kraepelin has described certain pre-senile paranoic states of suspiciousness in which the judgment is markedly impaired (pre-senile Beeinträchtigungswahn), the onset of the disease being slow and insidious and characterized by the appearance of hypochondriacal and persecutory ideas. The latter are particularly directed against the members of the family and have a sexual coloring. Associated with these insane ideas there are various nervous pains, spasms, etc. In a few instances the hallucinations play an important part. The connected thinking, apart from the appearance of the insane ideas, is not greatly disturbed. The moods are those of depression and apprehension, or sometimes irritability and excitement. The volitional acts are at times replaced by marked impulsivity, and the insane ideas generally exert a dominating force. It is not improbable that some of these cases represent examples of dementia præcox developing late in life. The group is ill-defined and cannot be described as in any sense containing cases that are specifically characteristic of this period. In some instances the symptoms are characterized by a slow progression ending in the typical senile dementia.

(*z*) *Senile Dementia*.*—A sharp line of distinction between this and the preceding group of cases can not be drawn. As has already been said, cases of involutional melancholia may terminate in dementia in either one of the following ways:

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* Pickett, William. Senile Dementia; a Clinical Study of Two Hundred Cases, with particular Regard to Types of the Disease. The Journal of Nervous and Mental Disease, No. 2, 1904.

In the first place, the dementing process may follow the attack of mental depression without any break in the continuity of the morbid process; a condition that is particularly apt to be met with when the disease runs a protracted course and where the systematization of the insane ideas begins early and remains more or less stable. Again, patients may pass through

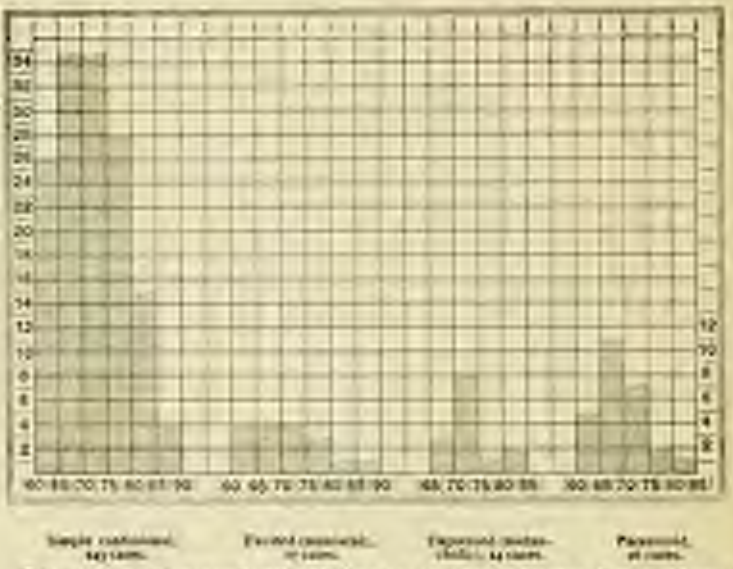


Chart to show the ages of patients belonging to the several types of senile dementia. The figures at the bottom represent the ages by hemidecades; those at the side, the number of cases (Pickett).

one period of depression, apparently recover, then after an interval of time there is a second or third attack, during which the mental reduction so characteristic of the group under discussion makes its appearance. Many of the excited forms merely represent the precursory symptoms of this stage. Again, dementia may intervene in a second type of cases that cannot be distinguished clinically from those described under the arteriosclerotic forms. To avoid repetition, the initial symptoms of the dementing cases will not be referred to again in detail, as they do not justify the attempt to establish more definite distinctions. The existence of dementia is to be sus-

pected in those cases where the symptoms which have been described persist and where there are evidences of permanent mental impairment, often distinguishable by the greater lowering of the faculty of attention and the consequent defects in associative memory. Such patients are able to retain few, if any, recent impressions, and at the end of even a few seconds test words or phrases can not be recalled. As might be expected, orientation in time and place frequently suffers greatly, and some patients cannot tell the hour of the day and may even be unable to remember whether it is early morning or late in the evening. In spite of this marked inability to recollect recent events, those which have occurred in the long past are frequently well remembered, so that circumstances connected with youth may be related with considerable accuracy and with some degree of detail.

The power not only of picking up but also of elaborating new impressions becomes less and less. Hallucinations, particularly the auditory forms, as a rule, become somewhat more frequent, and the patients complain of hearing strange voices which frequently have a threatening and unpleasant character. The stability of the hallucinations is not, as a rule, constant, since they frequently change with great rapidity.

In addition to the auditory and visual forms, we often meet with marked disturbances in all the organic sensations, giving rise to new or intensifying the already existing insane ideas of suspicion and persecution. The patients lose faith in all those with whom they are brought into contact—nurses and physicians alike are accused of attempts to poison them, of being the instruments of unseen spirits, of the devil, and strange and supernatural powers or influences are attributed to them.

The emotional instability is frequently very marked; the patients often become excessively irritable and dislike intensely to be disturbed in any way. A simple question as to how they feel may give rise to an extraordinary outburst of temper, when they will struggle hard to get away from the examiner. When left alone they may sit still for hours and only occasionally

seem to evince any interest in what is going on about them. At times the facial expression shows apprehensiveness, anxiety, or even marked depression, but, as a rule, in the terminal stages is characterized by a considerable degree of apathy. In other cases, particularly in those which, clinically as well as histologically, bear a resemblance to dementia paralytica, there is some exhilaration and exaltation present. The patients may converse freely, may be markedly egocentric and indulge in excessive confabulation—giving accounts of extraordinary journeys, of remarkable deeds they have performed, boasting of their superhuman powers and of their great mental attainments. In these cases the speech compulsion may be marked and the patients give expression to their thoughts in a way that may suggest an inner flight of ideas. As a rule, they are far less amenable to external stimuli than are individuals suffering from pure mania. In the later stages the compulsion and flight of ideas disappear and the patients may remain silent for long periods of time, only occasionally giving expression to a few ill-defined and senseless syllables. The articulation, as a rule, is much less impaired than in cases of dementia paralytica. In addition to the symptoms already referred to, there is marked impulsivity, which not infrequently shows itself in various ways which are of great forensic importance—theft, arson, attempts at murder, exhibitionism, or assaults upon children. The last two, in nearly all instances, are the results of impulses of a sexual nature.*

The symptoms already referred to not infrequently show a marked tendency towards exacerbations with remissions and occasional transitory delirious states. During such periods the hallucinations, insane ideas, as well as the motor restlessness and disturbances of speech, become much more marked. As the disease progresses the exacerbations are less acute and the mental reduction becomes more pronounced until the life of the individual amounts to an almost purely vegetative existence.

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*Hoche, A.: Dementia Senilis. Handbuch der gerichtlichen Psychiatrie. Hirschwald, Berlin, 1901.

No attempt is made to eat, and such patients seldom give expression to any feeling. In point of fact, they seem to be reduced to a condition in which there is a great deficiency in the appreciation of all organic sensations.

The complications that may occur, as would be expected, are very varied and not infrequent—attacks of vertigo, stuporous states, epileptiform attacks, symptoms pointing to focal lesions, paralyses, etc.

Death usually intervenes after some cerebral complication, such as hemorrhage; or these patients are particularly apt to develop pneumonia, exacerbations of an existing nephritis, gastro-intestinal disturbances, diarrhœas, and not infrequently, unless the greatest care is taken, a general infection, the result of a bed-sore.

The *differential diagnosis* in the typical cases is not difficult. But in some of the atypical forms there may be inequality of the pupils, impairment of the light reflex with disturbances of speech, and euphoria, so that the clinical differentiation from cases of dementia paralytica is exceedingly difficult and, in fact, frequently impossible. Cases of manic-depressive insanity which develop late in life may give rise to considerable difficulty. Frequently it is necessary to wait until the termination of the attack before a positive opinion may be ventured. As a rule, the dementing process seldom makes its appearance before the middle of the seventh decade. If the history of the case shows that the patient has not been subject to any form of mental aberration prior to this period of life, the occurrence of the symptoms of senile dementia may be more easily recognized than in persons who have suffered from other psychoses, particularly when little or nothing is known in regard to the factors of immediate etiological importance. The general consensus of opinion among clinicians is that the hereditary factor is not one of great importance. The baneful influences due to the stress and strain of social conditions, and such factors in the environment of the patient as tend to prevent the enjoyment of old age with ease and dignity, may be considered as provocative.

The *pathological changes* in senile dementia vary in intensity and extent from those described as occurring during the period of old age. There is a general rarefaction of the tissues with marked chronic cell changes and some increase in the glia. In typical cases the vascular changes, although present, are relatively so trivial that they can not be the sole cause of the other lesions in the cortex.

It is not possible as yet to refer the variations in individual clinical pictures to fundamental differences in structural lesions. Meyer [10] has described changes occurring in the brain in a number of cases, particularly in the end stages of depressive disorders, near or after the climacteric period. These lesions he attributes to a central neuritis, using the term as an equivalent of parenchymatous neuritis mainly of central distribution. The symptoms, as a rule, are vague, consisting chiefly in difficulty in locomotion and in the coördination of movements, jactitation of the limbs, febrile disturbances, attacks of diarrhœa, followed by a terminal period in which the mental state is one of apprehensiveness, delirium, or stupor.

The *forensic importance* of these cases is considerable, a fact that may be referred in part to the amnesias, the occurrence of insane ideas, to the occasional impulsivity of the patients, and the marked emotional anomalies.

The *treatment* is purely symptomatic. As a rule, patients are better off in an institution where they can have the benefit of careful medical supervision, trained nursing, hydrotherapy, massage, etc. Such persons are particularly prone to show great animosity and to become much more intractable when surrounded by the members of their own family.

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[10] Meyer, Adolf: On Parenchymatous Systemic Degenerations. Brain, vol. xxiv (1901), p. 47.

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